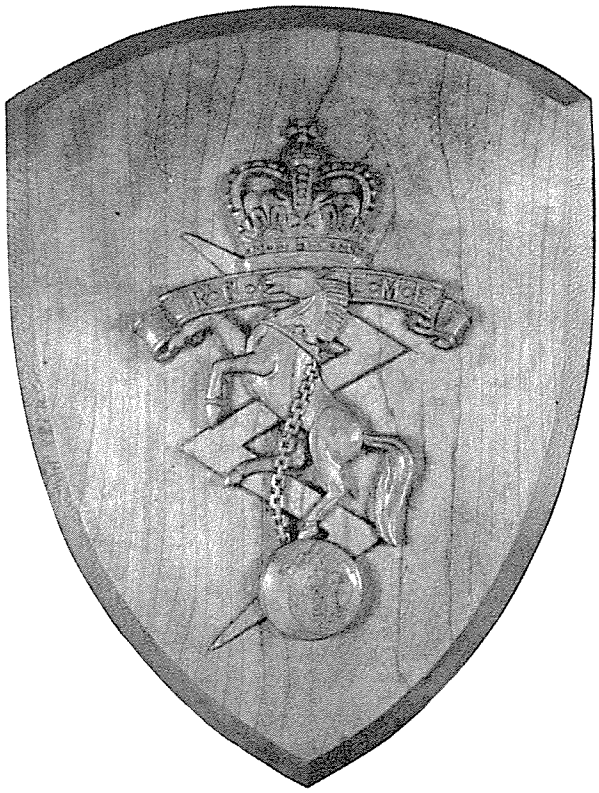

RCEME TECHNICAL BULLETIN

OCT 1965

VOLUME 10, NUMBER 4

Features

CORPS BADGE
Plaque presented to CMR

WORK SAMPLING
For higher production

ENGINEERING TRENDS
Detroit Automotive Survey

WHO'S WHERE
RCEME officers' locations

RCEME TECHNICAL BULLETIN

Vol 10, No 4, Oct 1965

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This publication is issued under the authority of Col KR Ward, CD, Director of Electrical and Mechanical Engineering. The contents have been approved for publication by Lt Col JP Sherren, CD.

The Bulletin is published to assist RCEME personnel in keeping abreast of current trends in developments, to amplify or emphasize technical instructions, to circulate news of Corps and individual activities, and to provide a forum for discussion and the exchange of ideas by members of the Corps. The information and statements herein do not necessarily represent official policy and are not to be quoted as authority for action.

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A WORD FROM THE DIRECTOR

I am very pleased to have been appointed Director of our Corps, particularly at this very interesting period in its history.

I find I have returned to a vastly different Ottawa than the one I left six years ago. Both the city itself and the Department of National Defence are in the throes of great changes. At the same time I am impressed with the fact that our Corps has changed very little and is still operating in the sound principles that it has developed over the years.

While I am not able to foresee all the effects that the reorganization of DND will have on our Corps I have no fear for its future. While names and organizations may change, the workload will continue to exist and to grow and personnel with the necessary knowledge and skills will still be required. Integration of the forces will, I believe, finally bring to the technical services the status they desire and which they have long sought unsuccessfully. The horizons of our officers and tradesmen will be considerably broadened and their work cannot help but be more interesting as a result.

I would ask all of you not to indulge in pessimistic speculation. If ever there was a time for a positive approach, this is it. Over the years our Corps has developed a high standard for its personnel and their work and has evolved systems and organizations we know to be sound. We are therefore in a position to make a very large contribution to the integrated organization. This will only be successful, however, if we are united in our desire to make it so. I urge each of you at this time to give your full support to all activities of The Corps, both on and off duty, so that we may remain strong and united.

Col K R Ward Succeeds Col A Mendelsohn

COLONEL KR WARD, CD

Our new director was born in Kingston, Ontario, on 1 November 1918. He graduated from The Royal Military College of Canada in 1939 and was commissioned a lieutenant in the Permanent Force. In April 1940 he went overseas to the Military College of Science where he was trained as an Ordnance Mechanical Engineer. He returned to Canada the following September and was appointed to the training staff of the Royal Canadian Ordnance Corps Training Center in Barriefield and promoted to Captain in June 1941. Here he was responsible for organizing and conducting the training of direct entry officers in the skills of the Ordnance Mechanical Engineer.

In 1941 he married Miss Elizabeth Hanson of Kingston. They have two children, Michael and Timothy.

In August 1942 he was promoted to Major and appointed Deputy Chief Instructor. In April the following year he served with No 6 Ordnance Depot Company in Goose Bay, Labrador. He then attended the Canadian War Staff Course at the Canadian Army Staff College. After graduation he again went overseas and held various staff appointments in the United Kingdom.

He returned to Canada in April 1946 and was employed in the Directorate of Mechanical Engineering until September when he was selected to attend Queen's University in Kingston to complete his studies in engineering.

After graduation the following year Major Ward was posted to the Canadian Army Liaison Establishment in London, England, where he served as a General Staff Officer 2nd Grade until his return to Canada in February 1950. He returned to DEME with the appointment of DADEME until January 1951 when he was promoted to Lieutenant Colonel and appointed an ADEME.

In February 1952 Lieutenant Colonel Ward was appointed Command EME, HQ Central Command, Oakville. He returned to the Directorate in October 1955 to assume the important appointment of ADEME Plans, Training and Organization. In 1958 he was appointed Deputy Director and in 1959 he went to Washington as a General Staff Officer 1st Grade in the Canadian Army Staff.

He returned home to Kingston as Commandant of the Corps school, August 1962, in the rank of Colonel. He succeeded Colonel Albert Mendelsohn as DEME 7 Sep 65.

PRESENTATION OF THE CORPS BADGE
to
LE COLLÈGE MILITAIRE ROYAL de SAINT-JEAN

BY LT COL RH HODGSON, CD

About a year ago, Colonel J Armand Ross, DSO, CD, Commandant of CMR, started to collect certain badges of all three Services. These badges were to be on plaques of a standard size and shape and were for display at CMR for the purpose of creating a feeling for Service traditions in the cadets.

Colonel A Mendelsohn, CD, Director of RCEME at that time, was invited to contribute our Corps Badge to this important collection. He accepted the honour on behalf of The Corps.

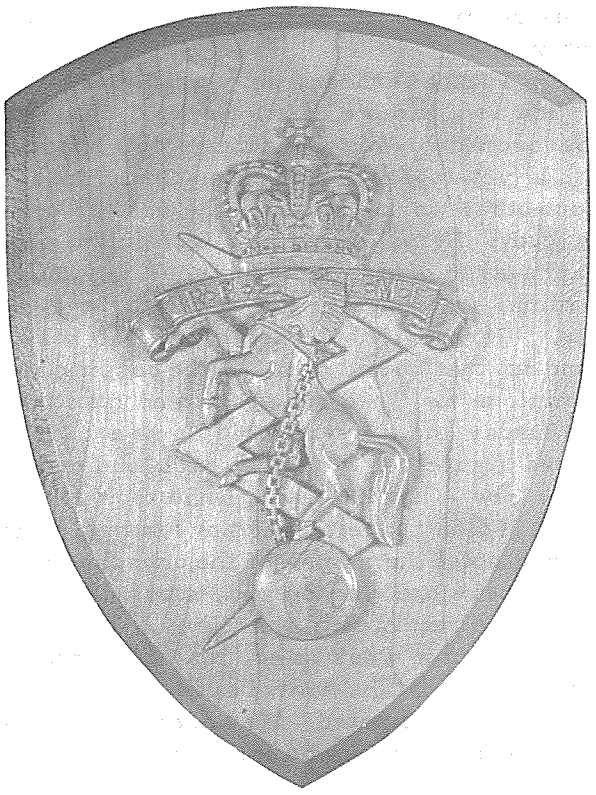
It was decided that the presentation should be an accurate replica of The Corps Badge and yet at the same time truly distinctive, perhaps hand carved by a French Canadian sculptor.

Reflecting back on the history of Early French Canada, Dr RH Hubbard,[1] Curator of Canadian Art at the National Gallery of Canada, said in a series of public lectures, "When one speaks of sculpture, it is with a different meaning of the word from that which it has in Europe. Canadian sculpture had little to do with marble and bronze statues. It did, however, have a close connection with the provincial religious sculpture of the seventeenth and eighteenth centuries in France. In Canada, moreover, sculpture meant wood-carving exclusively. This art had got its start quite early, during the main period of colonization in the 1660's.

(1) For further reading see:
Hubbard, R. H., The Development of Canadian Art, The Queen's Printer, Ottawa; 1963; $8.00.

Hubbard, R. H., An Anthology of Canadian Art, Oxford University Press; Toronto; 1960; $5.50.

"Wood sculpture was the leading art in New France. Laval, the first bishop, brought craftsmen from France and installed them in a workshop-school at Cap Tourmente, a few miles below Quebec. Their skills were needed from the start if colonial churches were to be furnished at a reasonable cost with altars, reredoses and pulpits. The clergy insisted that the churches should be as well fitted out and the mass celebrated as splendidly as in France.



Plaque carved by M. Valliere presented to College Militaire Royal de Saint-Jean. (CMR photo by kind permission of Col Ross)

The interior of the chapel of the Recollect Monastery in Quebec as seen in the Richard Short engraving of 1761 illustrates the furnishings of the typical town church of the time. "(A print of this engraving is in the Richard Short collection hanging in the entrance hallway of the Officers' Mess at the RCEME School.)

With this heritage in mind, Colonel Mendelsohn decided that the presentation to CMR should be carved in wood by an artist who sculptured in the highest traditions of early French Canada.

Colonel Mendelsohn asked Major CR Morgan, CD, Commanding Officer, 5 Coy RCEME, Quebec, and S sgt Jean-Paul Champagne, CD,[2] his artistic consultant, to find such a sculptor.

After consulting the clergy in Quebec City, Major Morgan and S sgt Champagne visited the home and studio of Monsieur Lauréat Vallière at St-Romuald-d'Etchemin. S sgt Champagne has written his impressions of this and following visits.

"M. Lauréat Vallière is a slight man in his mid-seventies. His French is rapid and accurate, it is seasoned with a charming local accent, he seldom ventures into English except in his reading. His keen eyes are in constant motion.

"That afternoon, he had only one statue to show as a sample of his work, it was that of a Second World War Canadian soldier charging with a (yet-to-be-carved) Sten Gun. We asked about other works of his and he showed us into his study. He pulled out an album full of photographs taken of his master-pieces including the Cardinal's Throne at the Basilica in Quebec City. Personally, I was impressed when I found out that he had done all the carving at St-Dominique's. I had gone to attend mass there one Sunday and remembered those carefully carved figures of monks at each end of every single pew – how fantastic I had thought at the time... I didn't care to look any further. Major Morgan noted the names of the churches where M. Vallière had worked and, after a dry vermouth, we returned to the City.

"About a week later, Major Morgan informed me that he had visited some of the churches he had noted. We agreed that we had indeed found the man who could produce a plaque bearing The Corps Badge in the authentic French-Canadian sculptor's tradition. We arranged another meeting for the following Saturday morning (Grey Cup Day); if we thought we had found the man with the right talent, we had no idea what the financial implications might eventually be. M. Vallière would not quote a price, we did not dare insist but we had to get a firm commitment. After a good many stories, way-out tangents mostly, we finally got a few clues as to what the artist would consider a fair price. While running down some of those tangents, we learned of M. Vallière's pioneering in aircraft building before the First World War. He dropped out of this field when his close friend and associate died in a crash. He was interested in travelling but he never got to do so; as a form of compensation, he has read National Geographic Magazine for decades. Also, his friends drop in from many of the fifty States. All this makes him a rather unique person whose views are often fascinating to hear.

"Major Morgan now had all the facts for the Director and after an exchange of letters, it was agreed that M. Lauréat Vallière would be commissioned to produce the plaque; also, in view of the artist's attitude toward strictly commercial exchanges, it was suggested that a suitable token of appreciation should also be presented to him.

"We returned to St-Romuald to get the work launched. Again we were treated royally. Following this encounter, I set out after a book which would serve as a meaningful memento.

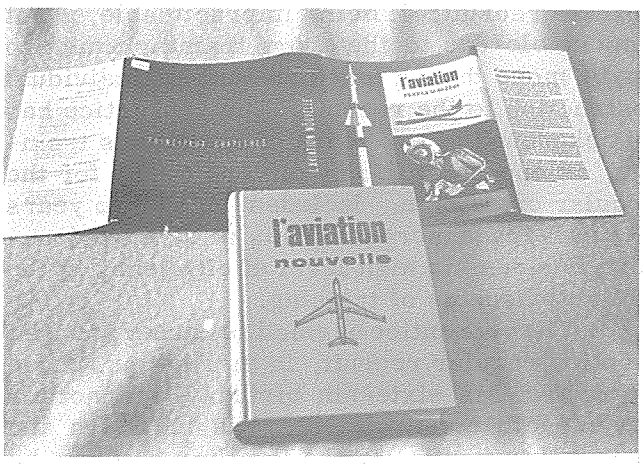
This bas-relief is from a traditional painting of the founder of the Christian Brothers, St Jean-Baptiste de La Salle, surrounded by pupils.

(2) See "Our Commemorative Scroll"; RCEME Technical Bulletin, Vol 9, No 4, Oct 64; p 2.

The book I picked was by Larousse of France, entitled 'L'Aviation nouvelle'. The following dedication was lettered on the flyleaf:

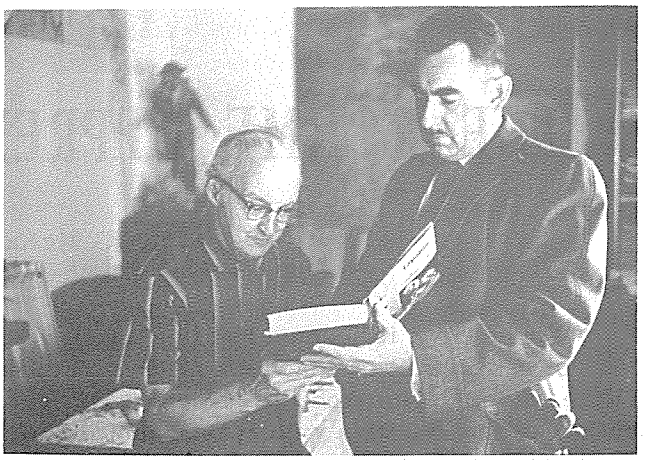
'Ce volume est présenté à
LAURÉAT VALLIÈRE,
sculpteur,
de la part des Officiers du
CORPS ROYAL CANADIEN
DU GÉNIE ÉLECTRIQUE ET MÉCANIQUE
en gage d'admiration envers
un talent remarquable
28 nov 64'

"Two weeks passed and then I received a call from M. Vallière; the plaque was ready. I advised Major Morgan and once more we were off to St-Romuald-d'Etchemin; I took along my 35mm camera loaded with Tri-X film.



M. Vallière being presented with a copy of "L'Aviation nouvelle" by Major Morgan.

"Before we got to see the plaque, there was an amusing incident. It began as we first walked in the door of the small workshop. Major Morgan entered first and met M. Vallière half-way across the room. They shook hands while I was closing the door. I was carrying the camera and the book. Before I realized what was happening, M. Vallière stood before me, grabbed the book from under my arm saying in effect: 'May I see it? I like books...'. We certainly had not planned it this way, but when the facts got sorted out, the old boy quivered with glee. He had received many books before, books about arts and crafts, some had been very expensive, but no one had ever offered him something to evoke in him memories so dear. He was very pleased with the hand-lettered personal dedication on the flyleaf.



"Well, we had not seen the plaque yet; it was in his study. We took a few photographs in the workshop before going into the study.

"Then we saw the plaque. I felt the warm glow of complete satisfaction; Major Morgan reacted with a broad, happy smile. Mlle. Vallière joined us; she is a painter. We then had the privilege of a private showing of her paintings. Much later that day we returned home.

"Unfortunately we did not get a shot of the plaque, as we had hoped to use a film with a finer grain or else colour. As it turned out, we never got another chance.

"As I remember it, the plaque can be described as a shield approximately ten inches high, bearing the RCEME Badge. The whole is carved in bas-relief out of a single solid piece of hard white maple which has a rich ivory-like appearance. M. Vallière took advantage of the fine close grain of the wood to raise sharp details into evidence while respecting both the traditions of his craft and the exigencies of the subject. It was breath-taking to see for the first time."

Col JA Ross, Commandant, in acknowledging the gift, remarked on its originality and commented that it reflected Quebec traditions and those of the College.

Editor's Note: Because we believe our readers to be whole men with interest and vision beyond their day-to-day activities, we are happy to publish the above for its cultural and esthetic value.

THE RCEME APPRENTICE TRAINING PLAN

By Cpl JG McKay – Apprentice Coy

Whenever it is necessary to assess a new idea, or the result of that idea after a period of time, the usual method is to compare the end product of the new idea with that of the old, or existing system. If the product of the new idea is equal to or surpasses that of the old system with which it is compared it is logically acceptable.

In evaluating the success or failure of the RCEME Apprentice Training Plan on the above basis one would be extremely hard pressed to find anything which could disqualify the Plan with respect to efficiency in the training of new tradesmen. However, it is probable that the success or failure of the Plan could be attacked if the end product was only equal to the normal recruit induction and training system; mere equality being insufficient to warrant the Plan's existence in an economy-conscious atmosphere.

Let us examine the Apprentice Plan in terms of how it works and how it should continue to work to produce trained soldiers and tradesmen for the Corps of RCEME.

It is understandably difficult for many members of the Corps to know much about the apprentice or to assess his potential or the system which trained him, since he is no longer an apprentice, but a trained soldier and craftsman when he makes his appearance in any unit outside the RCEME School. By that time he has undergone two years of military, academic and trades training of the highest standard available.

The system which trained him has a history which goes back to 1952 and has a highly progressive and impressive background. The graduate apprentice going out to his first posting is one of 568 young men (discounting the present group of whom 72 per cent are expected to graduate) who have graduated into the Regular Service from a total of 784 enrolled since the first intake. Of the successful students, fourteen have received commissions in the Army and an undetermined but relatively high number have reached junior and senior NCO status. Potentially, every graduated apprentice passing into the Regular Service is NCO material; the high standard which he must necessarily reach in order to graduate ensures it. Such potential is due mainly to the length and extent of training, which is also the prime element in establishing his advantage over the regular recruit; it being impracticable, if not impossible due to the short training time, to apply more than a token amount of individual instruction to the recruit. The apprentice has a background of two years of continuous training, as opposed to forty or less weeks for the regular craftsman. Included in the two years is a two-grade increase in his academic education, besides his high level of efficiency in the military aspects of training.

The apprentice begins his career younger than the regular recruit, in that he must have reached his sixteenth birthday, but not his seventeenth on enrolment. His induction and processing then follow the familiar pattern: he is quartered, kitted and introduced to military life in a similar manner. On a very concise and efficient schedule he begins twenty weeks of basic military training, with all possible emphasis being placed on disciplinary subjects, such as dress, drill, bearing and leadership, as well as driver training. There is no extra consideration, with respect to his age, in what is required of him in order to maintain the standards on a regular recruit level and, in certain subjects, the standard and training are greatly extended.

Upon 'Passing Out' of basic training he goes on to academics to finish up his first, or junior year.

Interspersed throughout the Junior year are many and varied additional activities designed to bring the Apprentice to an all round high standard. His physical and recreational training culminates in the Annual Apprentice

Tournament, in which the apprentice units from Central and Quebec Commands meet and compete in drill, hockey, basketball, volleyball, smallbore shooting, gymnastics and tabloid sports, in which individual as well as team and unit trophies can be won. During the year there are other sports and activities in which he may participate, with games, practises and competitions organized within the schedules of local civilian secondary schools. He may be a member of the RCEME School rifle team, the band, the Area swimming team, enter local sports competitions; in all of which he is greatly encouraged and usually renders an excellent account of himself.

As a respite from hard training and as a reward for his effort, he is granted sixteen days special leave during the Christmas holiday season and all other holidays which arise during the training year. He terminates his year with a graduation ceremony in which he passes through the ranks of his senior colleagues and emerges a Senior Apprentice and is granted 30 days annual leave before commencing his second year.

Beginning in September, the senior year is dedicated mainly to trades and academics, with a period of refresher and National Survival training; as well as the same extra activities which were available during the junior year.

At the end of the second year he will terminate his apprenticeship with a second ceremonial parade which is His graduation. At this point he passes on his status of Senior Apprentice to the oncoming juniors and himself passes into the ranks as a trained craftsman.

What does the graduate Apprentice bring to the Regular Service which will be an asset and a justification for the time and effort expended on him? He is eighteen years old. He is a highly trained soldier and qualified tradesman with a minimum education of grade ten and a background of two years military experience, a good portion of it acquired on half pay. He can offer the Corps a minimum of three or a maximum of thirty-seven years additional service. By virtue of his graduation he has proven himself capable in a highly selective environment; a selection which does not cease upon enrolment, nor lets him slip through without the required achievement. He has a competitive spirit and knows what he wants, having had sufficient time to establish a goal. He has the ability to set a standard second to none in his parent unit and possesses sufficient pride and self-confidence to maintain that standard.

It is not meant to imply that the training of Apprentice Craftsmen does not include some measure of difficulty, or that the influx, although systematically selected, does not contain an element of restless, energetic and impulsive boys. It is equally understood that it requires certain experience and stability in order to accept the abrupt transition from the relatively unstable world of the sixteen year old, to the comparative exactness and highly demanding routine of military life. It is conceded that a sixteen year old boy is not experienced in anything, and it is, therefore, a necessary part of his training that he is guided into the proper attitude toward his chosen situation. Time is available and is utilized, often on an individual basis, to instruct and guide him through awkward and difficult periods which may hinder proper character development. Opportunities are given him to test and develop his self-confidence and to form in him those qualities essential to leadership. In all phases of his apprenticeship he is rewarded for his effort and he comes to realize, perhaps later in his career, that his training, however arduous it may have seemed, is as general as any form of training, but also as personal as he would have required for himself.

In summary, the Apprentice Training Plan is an idea that has been applied and has been successful. It has surmounted the initial obstacles of organization and inexperience and produces trained soldiers and tradesmen of an extremely high standard. When the green flash of the apprentice is finally removed during a graduation ceremony and he stands proud and straight, on equal terms with the serving soldier, it is evident that "Boys do become Men".

WELDING CART PAPOOSE

The maintenance department of Electro-Mechanical Corp, Fruitville, Fla, keeps welding gun tips both handy and out of harm's way by welding a series of pipe nipples to an angle iron crossbar on the back of the welding cart.

When a job of welding's needed, there's no hunting for a strayed gun tip, or finding improper storage has damaged a tip nozzle.

WORK SAMPLING: FIRST STEP TO HIGHER PRODUCTIVITY

By John D. Staley and Irving A. Delloff

Director of Manpower
GENESCO, Inc.

Director of Industrial Engineering
The PrestoLock Company

"I CAN TELL at a glance whether the weaving is good or bad. If most weavers are bent over their looms mending warp breaks, weaving is bad; if the weavers are mostly watching their running looms, weaving is good."

This remark made by an English weaving foreman 30 years ago described a primitive form of what is today called work sampling. Modern work sampling techniques have been refined until they now provide a way of evaluating a department's efficiency without tedious around-the-clock observations of every operation.

Work sampling is a relatively inexpensive tool that can pinpoint—with reasonable accuracy—the problems on which you must work to improve your department's productivity, whether it's reorganizing the work flow in an office or reducing costly mechanical breakdowns in a machine shop.

How does work sampling work? It's based on the mathematical theory of probability: that a small number of chance occurrences tend to follow the same distribution pattern as that in the entire population of occurrences. In the case of loom stoppages a number of snap observations taken at truly random times provided a reasonably accurate picture of the total frequency of loom stoppages.

In many cases, work sampling can give the supervisor a picture of his operations that he can obtain in no other way. The standard methods of measuring progress may not really pinpoint the areas where performance can be improved. Although a department may be meeting its schedules, keeping costs in line with budgeted amounts, or maintaining satisfactory quality, its productivity can actually be low in relation to its potential.

There can be many causes of low productivity, but here are some of the most common:

1. Delays in routing work to and from the operators.
2. Excessive personal time.
3. Lost time in setting up or in other work preparation.
4. Insufficient work to do.
5. Bottlenecks.
6. Obsolescent methods.
7. Unbalanced work loading.
8. Defects in process.

A casual glance around the office or plant will not reveal these problems. There may be busy activity: people on telephones, machinery clacking, people walking and carrying work, visitors attended to, and so on. But closer study may show that an alarming number of the telephoners are actually in the "waiting for work" category, as are the walkers and watercooler attendants. Work sampling is a way of providing such a study.

The first step in work sampling is to divide employees' activities into categories. For example:

1. Working:
   a. Doing productive work and rework.
   b. Removing completed work.
   c. Getting information about work in process.
   d. Off the floor, working.
   e. Receiving or giving instruction.
   f. Other activities.
2. Idle:
   a. No work available.
   b. Waiting for work to be set up.
   c. Mechanical breakdown.
   d. Waiting for instructions.
   e. Waiting for equipment.
   f. Personal.

To plan your random observations, prepare a chart listing the categories on one coordinate and the random times on the other. Take care that the times chosen are truly random and don't fall into any set pattern.

One method is to use a table of random numbers, which can be found in most handbooks on industrial engineering or statistics. First, number the minutes of the work day—if your day starts at 9 a.m., 9:00 is 0, 9:01 is 1, 9:02 is 2, and so on.

Select enough numbers from the random-number table to provide the number of observations you want to make during the day. If you are analyzing a non-repetitive operation—or one in which some elements occur infrequently—your observations should be closely spaced. This will increase the accuracy of your over-all picture. However, if you are analyzing a short-cycle, repetitive operation in which all the elements occur frequently, you can spread out the observations.

On the chart, post the times which correspond to the random numbers you've selected. You'll end up with something like Figure 1.

Just as important as preparing the chart is preparing the employees whose activities will be observed. Give your subordinates complete information well in advance. Only with the voluntary cooperation of everyone involved will

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Mr. Staley and Mr. Delloff are the authors of *Improving Individual Productivity*, recently published by the American Management Association, Inc.

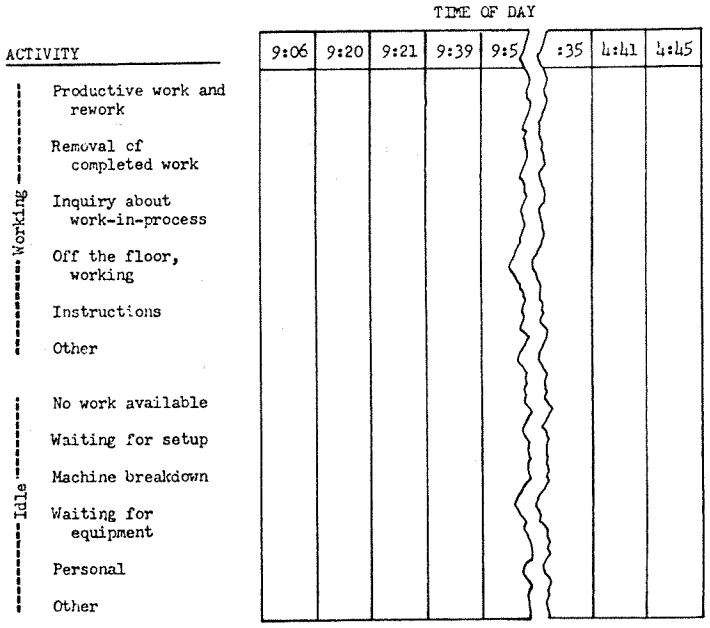

Figure 1

ple that the weather conditions, date, day of the week, and location have a direct bearing on the activities of the retail salesmen. Any study has similar biasing factors which must be taken into account.

When you feel that you have made enough observations to give you an accurate picture, break down the figures into percentages. For example, suppose that at 9:39 a.m., in a department of 60 people:

- 36 were actually working.
- 12 were setting up or preparing.
- 8 were idle because of mechanical breakdown.
- 4 were idle for personal reasons.

Convert these figures into percentages: That is, 60 per cent of the

(continued on page 10)

a work sampling study pay off in improved productivity. Unless the work-sampling program has been carefully explained and brought home in a personal way to employees, the study will do little good no matter how statistically sound it is. The adage holds true here as in other areas: People, not systems, improve productivity.

Thus, the supervisor should clearly explain the following points:

1. What work sampling is.
2. What work sampling is not.
3. How the study will be conducted.
4. What it will accomplish.
5. What it will not accomplish.
6. What use will be made of the results.
7. When and in what form the results will be reported back.

When this has been done, you're ready to begin making actual observations. If, for example, your first random observation is charted for 9:06, make a "snap" recording, at that precise moment, of the number of people in each category—and do the same with subsequent observations. Thus your first few tabulations might look like the ones in Figure 2, which is a chart for a work-sampling study in a retail store. Note in this particular exam-

Total Men 16 Observer Maxwell Weather Conditions Sunny & warm
Date 6-12 high 86° low 73° humidity 90°
Store 30 & Main
Day of week Wednesday

Beside the time listed, show the number of men in each category.

Time	Selling	Idle on Floor	Idle not on Floor	Not on Floor Customer Waits	Telephone	Stock Work	File Work, Letters, etc.
9:00	/		////	/	///	/////	//
9:25	////	//	//		//	/////	/
9:45	///// //	//	/		//	///	/
9:50		/////	///	/	///	///	/
10:00	/	///// /	//		//	/	////
10:35		///// /	///		//	/	////
10:55	/	////	/	/	///	//	////
11:20	//	/////	///	/	//	/	//
11:25	///	///	///	//	//	/	//
11:50	////	///	//	/	///	/	//
12:35	/////	///	//	/	//	/	//
1:15	///// ////	//	//	/	/	/	
1:25	///// ///// /	/	//	/	/		
1:30	///// ///// ///	/	/		/		
1:50	///// ///// //	//	/		/		
1:55	///// ///// ///	//	/				
2:00	///// ///// //	///	/				
2:40	///// //	///// /			/	/	/
2:55	/////	///// ////				/	/
3:05	//	///// //	///		/	/	//
3:50	//	///	///// /////			/	
4:00	//	///	///// ///	/	/	/	

Figure 2

CYPRUS MEDALS PRESENTED

Cyprus Medals were presented to the following men of the RCEME Detachment at a special parade held 17 Jul 65:

S sgt	RM	McDougall	L cpl	ER	Parent
Sgt	GH	Wall	Cfn	JHP	Ally
Cpl	JL	Beaulieu	Cfn	JMR	Dufour
Cpl	KR	Cox	Cfn	PE	Giggie
Cpl	HF	Gagnon	Cfn	NM	Herriott
Cpl	BA	Holden	Cfn	DJ	Langevin
Cpl	W	Pankew	Cfn	RJ	Taylor
L cpl	AP	Jarvis			

A similar parade was held on 29 Jul for men of the Maintenance Platoon (RCEME) of 1 QOR of C. The following personnel were presented with the Cyprus Medal at that time:

WO 2	EB	Wild	Cfn	EE	Beirnes
S sgt	RL	Mercer	Cfn	MA	Burgess
Sgt	RH	Addie	Cfn	NI	Hennigar
Sgt	NE	Matheson	Cfn	J	Mallon
Cpl	A	Beaudry	Cfn	JA	McInnes
Cpl	JD	Dunsmore	Cfn	FBS	Stephen
L cpl	O	Carr			

The medal is awarded after 90 days continuous service with the UN force on Cyprus.

The force is doing an excellent job of performing its main task which is keeping the peace on the island. There have only been a very few isolated incidents since UN troops arrived on the island in May 64. The Cyprus Medal is therefore an award which all personnel can be proud to wear.

(WORK SAMPLING continued)

group were actually working; 20 per cent were setting up or preparing; 13 per cent were idle because of mechanical breakdown; and 7 per cent were idle for personal reasons. By figuring the percentages for each observation time, you get a reliable indicator of how the group's activity fluctuates during the day.

The sampling may indicate, for example, that setup or preparation time is disturbingly high in the early hours of the day; personal delays take a sharp rise just prior to quitting time; and mechanical breakdowns account for a full 15 to 20 per cent of the departmental activities at any given point during the day.

Causes of Low Productivity

Armed with these data, the manager can look for the causes of low productivity. An upsurge in morning setup and work preparation time points to faulty planning and co-ordination. In a manufacturing plant this may mean that a second or third shift is "eating up" the work and leaving setup for the day shift. Tool breakage, too, on late shifts requires a new morning setup. Personal delays are usually a problem of discipline or motivation. Excessive mechanical breakdowns may be due to poor maintenance or faulty use of the equipment.

Properly used and applied, work sampling can point out weaknesses, oversights, and errors for which a price is being paid in substandard productivity. It will not automatically boost productivity, but it is a vital first step that can point the way to more effective planning, co-ordinating, and controlling.

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(See also Dept of the US Army Pamphlet 420-4 "Repairs and Utilities Work Sampling".)

Sgt Wall receiving his medal from Maj Millar, with S sgt McDougall assisting.

MAJOR ENGINEERING TRENDS

By Joseph Geschelin
Detroit Editor Automotive Industries

Recent years have witnessed the channeling of design creativity into specialized cars intended to meet the needs or desires of a particular segment of the yearly 7-million-plus market. Among more recent entries in this category are: Barracuda, Marlin, Mustang, Corvair, Olds 4-4-2, and Caprice.

The Caprice, the most recent entry, is intended for those who roam the super-highways. It has a big displacement (396-cu in) powerful engine coupled with low ratio rear axle for smooth, effortless sailing at top highway speeds. Gear box ratios are designed for total performance; permit fast acceleration and bursts of speed for safe passing.

Because such tangents from the norm are rather dramatic at times, it is necessary to view them in the proper perspective. For example, the fact that one of the leading manufacturers will launch a front engine, front drive car for 1966 does not mean a change in the course of car design for the mass market. It should be billed as a specialized vehicle for a select group of owners willing and able to pay a premium for something different in mechanism and performance.

Since it is both interesting and instructive to get the feel of engineering advances in the future, say out to five or 10 years hence, we have just concluded a series of visits with a selected group of leading engineers. This happens to be our procedure in gaining an objective grasp of the course of events free from speculation.

ENGINES

Let us make it clear at the outset that the conventional reciprocating engine – with refinements and evolutionary improvements – is expected to be with us for many years to come. On this we find complete unanimity. Prior to the emergence of the generation of high performance, OHV V-8's, progress was quite static and it was assumed that improvements in the reciprocating engine had just about reached dead end. The feeling among engine designers today is just the reverse. They all see continuous progress and improvement.

On the other hand, most engine men feel that regardless of what is done to the engine in the future, they will continue to aim at relatively large displacement, ample power, comparatively low speeds, quiet running and smooth without roughness at idle.

The big push too is toward progressively lighter weight and smaller packages with greater emphasis upon lower manufacturing cost. How such results will be accomplished depends upon the capabilities and inventive ability of the various practitioners.

SMOG CONTROL

One of the interesting results of our survey is an appreciation of the effects of the political and psychological pressures stemming from the need for smog control. From now on engine designers must keep in mind that any change in engine configuration has to encompass certain smog control parameters; better and more complete combustion coupled with increased fuel economy. There is no point to worrying about smog control devices at the exhaust end unless everything possible has been done to reduce emissions from the combustion chamber.

One end product is the determination that combustion chambers must have the minimum ratio of surface to volume. Most designers feel that the modified wedge chamber is the best known to the art at present. The spherical chamber gives the lowest value for surface to volume ratio, and if it is possible to develop a simple hemispherical head engine, with cost comparable to the conventional wedge combustion chamber – such an accomplishment could produce an ideal situation.

FUEL ECONOMY

Closely akin to these considerations is the need for increased fuel economy primarily because a leaner mixture is more conducive to a reduction in the volume of unburned hydrocarbons. Engine experimenters are working

with leaner mixtures, much leaner than is conventionally accepted practice. This leads to higher temperatures, the risk of valve burning, and consequently a search for materials capable of living with higher temperatures. It also means some new carburetor research and emphasis upon intake manifold arrangements that promise more uniform mixture distribution.

IGNITION SYSTEMS

Research in these directions also touches upon improvements in the ignition system. It involves spark plug design as well as means for initiating a hot spark unfailingly with leaner mixtures. One of the engineers suggested that this avenue may lead to wider application of transistorized ignition. Admittedly this is the most expensive route at the moment. But what would be the effect upon transistorized ignition research if such systems were to be required by hundreds of thousands or millions of units where automated manufacturing methods could be justified?

ALUMINUM ENGINES

The search for lighter weight and compactness naturally leads to a consideration of the aluminum engine. There is no need here to review the course of recent events. Suffice it to say that engine designers are viewing the situation with an open mind. After all, the first go-around proved that from the standpoint of performance and reliability the first generation aluminum engines did very well indeed.

Cost remains the overwhelming consideration. We have the feeling that the next time there is an industry move to an aluminum engine, it will have to go all the way. It will be all-aluminum with an aluminum head. Moreover, designers will have to go all the way to take advantage of light weight by redesigning the entire chassis in keeping with the lighter powerplant.

However, none of this is likely to happen until designers are sure that the cost of an aluminum engine is at least comparable with that of a thin-wall cast iron engine.

The impact of the aluminum engine did have a salutary effect. It shook foundrymen off their dead center and paved the way for the thin-wall casting technique, now a universal practice throughout the industry.

GAS TURBINES

Next to aluminum engines perhaps the biggest promotional effort has been expended on the gas turbine. For one thing it is interesting because it is an entirely different breed of powerplant. It offers the smallest and lightest package by comparison with any internal combustion engine. It has novelty for drivers who want something different.

What then is the situation? Of the Big Three, both General Motors and Ford see the gas turbine as the logical powerplant for large vehicles; trucks and buses. Here the weight saving and compactness of a large output powerplant are overwhelming by comparison with gasoline or diesel engines. The economics of commercial vehicles are entirely different from those of a passenger car. In commercial vehicles every pound of weight saving is translated into extra dollars of payload. Moreover, specific fuel economy is a major consideration in the economics of commercial vehicle operation. Here it is claimed that the gas turbine in large sizes has the potentiality of improved fuel economy.

Chrysler alone has pressed actively in the development of a passenger car gas turbine. We have to amend this statement by saying that even those who believe that the gas turbine is destined for trucks and buses, are making sure that no bet is overlooked and are doing work with passenger car applications as well.

As everyone knows, Chrysler has had a fleet of 50 gas turbine cars in the hands of drivers all over the country. It is expected that this experimental project will wind up with the experience and comments of 200 different people by the end of October, 1965.

What then? Then will follow a long period of sifting and collating the results. It is still an experimental project. For all we know it may mean back to the drawing boards for changes and refinements based upon the two-year road test. So far as we can judge this project is not yet ready to launch commercially.

The best estimate we can make at this point is that there will be no commercial end product in any category for five years and probably even ten years. We could be wrong but that is how it appears at the moment. Bear in mind that the Ford highway vehicle is strictly an experimental project, heading for perhaps 10 years from now.

Finally, it may be noted that currently there are no facilities for manufacturing automotive gas turbines on a mass production basis, nor do we know exactly what kind of machine tools will be required for large volume production. Even if a gas turbine were ready to launch, it would take time to find the most economical manufacturing cost solutions. It would take time to design and build equipment, and more time to build new plants.

WANKEL ENGINE

What about unorthodox engines? Regardless of the reception proponents may receive, it is our impression that engineers view such engines with an open mind. At the moment the Wankel principle is receiving a great deal of attention, although estimates of its commercial value are quite mixed. All of the people we contacted feel that this engine requires a great deal more research and development. There are some who believe that the problems of sealing, reliability, smoothness, and better combustion are not insuperable.

The Wankel principle is interesting because it offers a means of producing a most compact and lightweight package for its rated output. In this respect it appears to be superior to the conventional engine. However, the output of the basic powerplant is too low to be of real interest for an American car. The design of the Wankel is such that increased output is obtained by building the engine in rows on the same shaft: two rows, three rows, four rows, etc. One Japanese manufacturer is working with a four-row engine.

Although this is a controversial area, we find that one of the leading manufacturers has been sufficiently impressed to buy several NSU cars, equipped with the Wankel engine, for experimental use.

This engine may not make the grade commercially in this country. But you can't write it off. And you may as well know that it is getting more than casual attention on the part of the industry.

FRONT DRIVE

Switching from powerplants, let us take a look at the front drive car. Everyone seems to know that a specialized model with front drive will make its appearance for '66. Some people even know a great deal about its design features. As a matter of fact, we have reason to believe that one large competitor is prepared to launch his own version of a front drive car some time after the first manufacturer makes the introduction.

We might make it clear that we have not discussed the car with its originator. We have found agreement among others that the front drive principle is sound. It produces a large car with a flat floor without even a wrinkle. It is considered to have excellent stability in cross wind driving; and should have better cornering. However, it is expected to be more expensive due to the complication of mechanism at the front end, including constant velocity joints.

Apart from questions of reliability of the mechanism – which we are sure have been taken into account – other designers have brought up the matter of weight distribution. Some believe that the minimum ratio must be 60 per cent at the front, 40 per cent at the rear to counteract the effect of weight transfer on grades. One designer believes that it may take 65 per cent at the front to assure gradeability on wet or snow-covered roads. These conjectures will be resolved when the production car is announced.

The fact remains that weight distribution of this character requires special tire equipment since tire wear at the front would reduce tread life drastically.

Brakes constitute another major problem. The front brakes must handle over 50 per cent more loading than do the rear and downhill running on a steep grade may transfer as much as 85 per cent of the weight of the car to the front brakes. It will take much greater lining area or perhaps a suitable disc brake to provide for equivalent lining wear both front and rear.

EXTERNAL PRESSURES

Earlier we touched on the influence of smog control on the thinking of engine designers. Product designers now are subject to other kinds of pressures. On the one hand we find the politicians at all levels aiming at legislation that furthers their private ideas on safety. Politicians and do-gooders in other activities remain unaware of the time and work and money expended by automotive manufacturers in designing safety into motor vehicles. No

matter how much is published they appear oblivious to the facts; the laboratory research, the proving ground and road testing, the numbers of cars wrecked by designed crash procedures, by roll-over, etc. Such continuing activity provides the basis for improvements in structural strength and integrity.

The recent move by GSA to specify so-called safety equipment is bound to affect the course of the industry since GSA recommendations can be backed up by legislative action. What it means in the long run is that the public may have to shoulder an added cost ranging up to $100 per car extra for equipment that the owner does not want and may not use.

What is even more insidious is the activity of legal collision specialists who take on the prosecution of collision cases involving fatalities or crippling injuries. One recent case involves the wrecking of a new model car struck amidships at high speed. Compensation rested entirely on the fact that the wrecked car had a perimeter frame whereas prior models employed a narrow frame with an X-member. The legal talent was able to convince a jury that the manufacturer deliberately abandoned the cruciform frame for a cheaper and more vulnerable frame. The implication is that the same accident with an older model car would not have resulted in a fatality.

Results of this and similar cases impose a serious handicap on originality of design as well as product improvement. The product designer must think seriously before he decides to change the form of a critical component. If he makes a radical change and if there is a serious accident, the change in design becomes the target, regardless of its merits.

Thus the creative thinkers have become saddled with pressures that have no right to exist and yet can stifle progress and inventiveness.

Finally, it may be well to close with some observations on the course of the conventional reciprocating engine which will be with us for a great many years to come.

ENGINE INTERCHANGEABILITY

Co-operation between engineering and manufacturing has made it feasible in recent years to create families of engines which can be built over the same equipment. With this has come the principle of maximum interchangeability of components among engines in the same family. This reduces materially the number of distinct parts that must be manufactured, lowers costs by providing larger volume, simplifies assembly operations, and reduces the number of parts that must be stored in the service field.

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"Automotive Industries"

WHAT DOES HE MEAN BY THAT!?

Seems we dropped a 'bomb' in the lap of DEME Technical Services section with our story "How to be an Expert Painter with a Spray Can", in the July Bulletin. (These pressurized cans are usually referred to as 'bombs', are they not?) Anyway, with the best of intentions and with only the interests of our readers in mind, we reprinted what we thought was a most clear and informative instruction aimed at getting the best possible results from spray-can painting.

We were not aware that action had already been completed to provide entitlement for 7520-21-102-2275 Airbrush, Artists, Adjustable C1 to all RCEME workshops that have an instrument repair function. This equipment is superior to the spray bomb in that there is very little overspray and better spray control is achieved which facilitates that precise touch-up work which otherwise could not be accomplished. The use of the airbrush also eliminates the need for spray booths.

Automatic issue of the airbrush has been arranged by Canadian Forces Headquarters. If your instrument shop has not yet received one you should start an inquiry through your quartermaster.

Oh well, as the saying goes "You can't win 'em all". We can only state that opinions, etc, expressed in the Tech Bulletin are not necessarily official RCEME policy. Good luck with your spray cans, chaps - at home only, of course.

INTER-SERVICES DICTIONARY NEEDED

what is RCEME, anyway?

By S sgt P Johnson

Ask ten different people – and you'll get ten different answers; not all of them complimentary, and very few of them completely accurate.

Why? Because outside the bounds of their own limited experience, very few people know anything about RCEME. Not one book is available on RCEME, even in the CFHQ library. In ten years' back issues of the Canadian Army Journal, not one article has appeared dealing generally with RCEME problems or principles of operation (as opposed to general interest items on specific events). No Corps history has been published. The RCEME training manuals provide only the current answers to the RCEME problem; they do not provide a guide to an understanding of fundamental RCEME principles and problems; and they are not readily available to non-RCEME personnel. It is not surprising, therefore, that members of other Corps, and even some RCEME personnel, have little understanding of RCEME, its aims, and its ideals.

The lack of readable literature on RCEME can be excused in several ways: the Corps is not old enough; technical matters are not calculated to attract general reader interest and are in any event well covered by non-military books and journals; RCEME services are the Corps' best advertisement, etc. But these are excuses and should be acknowledged as such. A need does exist for a literature which will, at the very least, explain and correct popular misconceptions which can be tracked back to the origins of the Corps.

Before the introduction of modern, complex military equipment, if something broke down the operator either repaired it himself, stole one from someone else (I'm sorry, salvaged one) or got a new one from the stores. It was a simple self-help/supply problem, and solution. Because the equipment was simple, reliability was high, and very limited mechanical skills were adequate to repair it.

Since the introduction of more and more complex equipment, the situation has changed, and is changing, with increasing rapidity. At first it was possible for any unit to find men within itself with the requisite skills to repair the few pieces of equipment it held. Even during the 1914-18 war, when mechanical transport was first used on a large scale, it was possible for units to recruit sufficient mechanics for their purpose, and each unit had its own internal repair organization. Major support was obtained from the supply branches: RCASC and RCOC.

This unit repair system worked quite well even between the wars, when there was little equipment and lots of time to train mechanics. Theoretically this system had one big advantage for the units: the control of repair priorities and standards was essentially in the hands of the unit itself. The disadvantages of the system, however, were inherent in the system itself, in its fragmentary nature. Uniform training standards were impossible; the pace of training was slow; capable, ambitious men considered the unit repair section merely as a stepping stone to promotion, a job to be endured rather than welcomed as an essentially military task with its own rewards.

Early in the Second World War, these disadvantages came into sharp focus. The competition to recruit technically trained personnel was keen; training programs were inadequate; and while some units had more technicians than they could use, others did not have enough. The resulting inefficiency of the army's repair and maintenance system led, after much discussion and infighting, to the formation of RCEME in 1944. Originally providing only workshop services, the Corps has grown continually, until now it is responsible for the repair and maintenance of all army equipment at every level, with only one or two minor exceptions.

Even this capsule history is not widely

known, and yet, brief though it may be, it establishes the essential, inevitable existence of RCEME as a military entity.

Yet old prejudices die hard, and the opinion is still widely held that people in the military repair system, in RCEME, are second-class soldiers, lacking the ambition or the soldierly qualities necessary for service in 'arms' units. The answer to this prejudice is not to try and prove that RCEME personnel make as good soldiers as anyone else, but to prove, on both historic and practical, everyday grounds, the necessity and importance of the prime RCEME function, to repair equipment. Only then can the Corps justify itself, gain the respect and status it deserves on its own merits.

The Corps is not too young to start producing a literature of its own. Literature is, after all, a permanent record of experience, and without it, that experience is lost with the individual. It should be remembered that the formation and growth of RCEME has occurred in less than the period of a man's full-time service. (One senior RCEME officer who recently retired took part as a major in the original discussions on the formation of RCEME.) How much of this valuable experience is going to be lost to the Corps? How much has been lost already?

Not only does such a literature justify the past and the present, it prepares for the future. Essays, articles, even books by RCEME personnel, on topics of RCEME concern, can disseminate new ideas, stimulate controversy and interest, and lead to further improvement in the quality of EME services.

Wide open questions exist on which volumes could be written. What are the fundamental principles upon which a military repair system operates? What are the problems which affect the provision of EME services? What are the requirements of user units? Is RCEME meeting these requirements? And if not, why not? Has the fact that arms units contributed few officers to the Corps significantly influenced RCEME policy?

Three controversial articles in ten issues of the Tech Bulletin doesn't even begin to meet the need or the opportunity and it is particularly sad when there is no response to them. What is more, the Bulletin is seldom seen outside the Corps, and does little to promote understanding or respect.

What is RCEME? It is doubtful if anyone will really know until we, our successors, and those outside our ranks, can learn from a widely available comprehensive RCEME literature, produced by RCEME people.

...getting mighty big for his age...

HOW TO AVOID BEING MENTALLY 'DROWNED'

By Peter Duncan
Transformer design engineer,
Hammond Mfg Co, Guelph, Ont.

Environmental conditions in the design office these days are anything but tranquil. The present explosion in engineering development exhausts our ability to take advantage of the deluge of new products and components. Our creative spirit is satiated by an overabundance of progress.

Integrating mass progress with our daily work requires a continual current of change in our engineering knowledge. Such a rapid turnover in the contents of our memory is now required that we could describe ourselves – in the words of the mathematician – as 'differential characters'. It is therefore essential that we know something of our 'rate of change.'

A STATE OF FLUX

Change is inherent in nature. Everything is in a state of flux, from the stars in the sky to the atoms in the apparently solid desk top on which we write. Human life is a progression of individuals who are born to die so that nature may select those who have adapted successfully to the ever changing environment.

But whereas nature intended a gradual and relatively peaceful evolution, society is now forcing on us an artificial rate of change that is stressing to the limit our personal capacity to modify our working methods and keep up with new developments. When nature designed our biological machine, she did not allow for the continuous high speed change that has come to exist in the mental environment of the modern design office.

When nature designed our biological machine, she did not allow for the continuous high speed change that has come to exist in the mental environment of the modern design office.

NO-MAN'S-LAND

We work in an engineering no-man's-land, under attack from all directions. Every day we are introduced to something new. Advertising literature, new product information, manufacturer's releases, a barrage of data overloading the input circuits to our already over-burdened memory. Every magazine that we read is a knife edge of progress that cuts into our character. Volumes of what's new in this and what's new in that.

Mass progress may be beneficial to mass man, but it creates problems for us as individual engineers. To realize full satisfaction from our work we must have some degree of emotional stability. Such stability requires that we have in our memory a good solid core of durable engineering knowledge that we can use with confidence. It is no comfort to be told that the knowledge we now possess will be archaic in ten years, and that we may even have to go back to school to have our memory reprogramed with new information.

BALANCE OF OLD AND NEW

There is a limit to the quantity of new knowledge that we can absorb. The rate of change in the contents of our memory requires

We must limit the information that we receive from the vast field of new knowledge in which we work.

a balance between that which is new and upsetting to us, and the comfortable old pattern of tried and true ideas we have built up by past experience. For each of us there must be a certain rate of change that will result in the maximum satisfaction from our job. To exceed this rate will lead to confusion and instability. To lag behind our normal rate of change will lead to stagnation and eventual frustration because the world will pass us by.

Progressive change (at a certain rate) in the knowledge we possess is therefore essential to our job. Our brain is not a closed system, it requires a continual input of stimulating knowledge from the outside world. Data that we can take hold of with an enthusiastic will and build up into new ideas by creative thought.

Personality is a factor in our rate of change. Some of us are quite content to idle along at a leisurely pace, while others are not content unless driving hard with the accelerator on the floor, continually running on the upper limit of their abilities. But whether we like to change slow or fast, it is important to note that it is something determined from within us as individuals. We must therefore govern our life by a personal formula that will give us the power to develop and change at our own rate.

In this day of mass progress and groupthink we are treading on dangerous ground to uphold a principle of individual progress. But the most valuable quality that we possess, the ability to think creatively, is still an isolated process operating within each individual human brain. Group participation may stimulate our thoughts, but it requires only one man to think of a new idea.

NEED FOR CENSORSHIP

A strong creative personality is one that is self propelled. Useful new ideas cannot be formed from a confusion of information packed into an overburdened memory by an outside agent. Creative ability depends on our rate of change being made from organized knowledge, and it is our responsibility as individuals to censor the knowledge that we feed into our memory.

We must limit the information that we receive from the vast field of new knowledge in which we work. Just as a radio receiver has an extremely selective front end circuit by means of which it can choose a particular program from all the thousands of signals being transmitted, so we must be selective and pick up only those items of knowledge that we can amplify in resonance with our past experience.

To some extent this is easy, we just get into the habit of ignoring the magazines that do not concern us, and we do not have to read the flood of advertising literature that comes our way. We can also select the company that we keep and to some extent lead the conversation along lines that are useful to us. And of course, if we are electrical engineers, we do not have to attend a meeting of mechanical engineers.

CANNOT STAND ABOVE TURMOIL

But full power and control over our mental environment is not easy to achieve. In this democratic world we are in the habit of suppressing our personal desires and following the multitude. We are not skilled in standing alone above the turmoil in the sea of change around us, dipping into it only when we need information to pursue our personal progress.

We may ignore much of the new information that comes our way, but we cannot remove its presence. It surrounds us like an evil field of induction, penetrating our confidence, continually reminding us that our little bit of knowledge and influence is becoming a smaller and smaller part of the whole. A passive selection from available knowledge is not sufficient, our rate of change must be a force in itself.

GUIDANCE FROM COMPUTERS

Perhaps we can obtain guidance from the electronic computer, a machine often endowed with human characteristics. This transistor-hearted tool works efficiently with a memory

of limited storage capacity, content to be under the control of its human operator. The secret of the computer's proficiency lies in the organization of its memory, which contains only the information that is required for its particular function. It is isolated from data that does not concern it, protected by the operator who carefully selects and controls the information and instructions that form its input.

The computer operator represents a creative force. A force that reaches out into the environment of data, creating order in the confusion of knowledge available from men and other thinking machines.

If our memory was as clean and tidy, and as well-organized as the memory in the computer, we could equal its performance. If we had an operator to organize knowledge before we fed it into our memory we could function efficiently with our limited capacity in creative freedom.

ANSWER WITH 'SELECTIVE CONTROL'

The answer to our problem may be realized if we regard ourself as the 'computer operator' of our own mind. Actively reaching out into the field of new knowledge, searching out those items of data that have meaning to our particular engineering specialty. Directed in this way, our rate of change will become a smooth linear curve of growth, with no disturbing discontinuities.

When our memory is protected by a creative force of selective control, overpowering its tendency to be an instrument of passive response, we can look on this mass of new development as a rich source of engineering knowledge that is ours to enjoy.

We may ignore much of the new information that comes our way, but we cannot remove its presence.

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All RCEME Units ...

...Please Note

HER LINE IS ALWAYS BUSY, SO ..... MAY WE HAVE YOUR NUMBER, please.

We propose publishing a complete list of RCEME unit telephone numbers as a handy reference in case of emergency.

This, of course, means YOU. Jot your telephone number(s) down right now on a piece of paper. Send it to the EDITOR, RCEME TECHNICAL BULLETIN, DEME, CFHQ, Ottawa.

RCEME IN THE AIR

Contributed by Ssgt JE Knight RCEME
CFHQ T/L Flight

I Dropped a Bolt—I Know Not Where

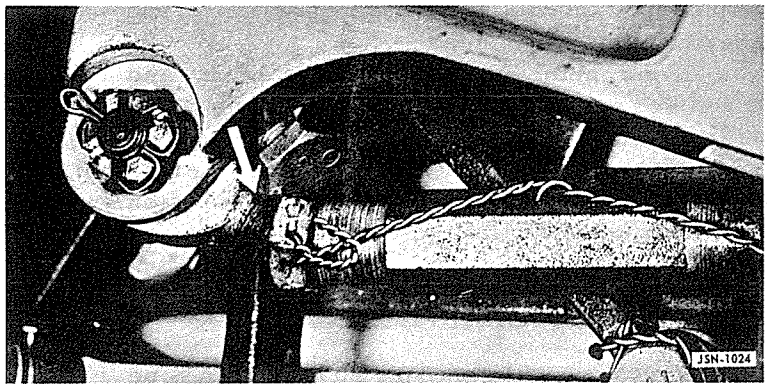


Fig. 1

A 5/16" bolt was recently found lodged in the fifth stage bellcrank on the right-hand side of a J79 engine. The jam-up resulted in the turnbuckle bolt being bent about 30 degrees out of alignment, with severe fatigue cracking at the pitch diameter. The lock nut was broken as shown in Fig. 2. A variable-vane angle check of the fifth stage showed it open in excess of the allowable limits.

The Lesson: If you drop a bolt, find it before you are found in trouble.

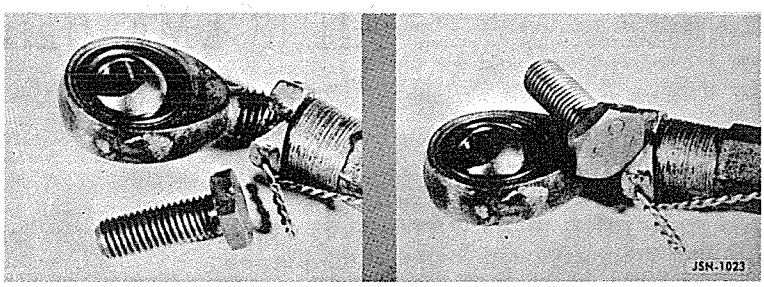


Fig. 2

WHAT'S NEW?

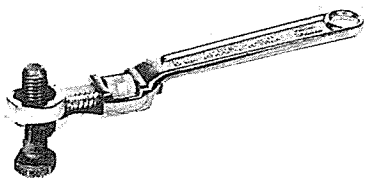
THE ADJUST-A-BOX wrench is new! If you've ever grabbed a 9/16" wrench and climbed to the top of a maintenance stand only to find that the job called for a 5/8, you'll appreciate this little jewel.

As the name implies, it is an adjustable box end wrench. The tool is particularly adapted to work where side clearance is too restricted to use a conventional adjustable wrench. It combines the strength and compactness of a socket or box end wrench, and is adjustable to cover multiple sizes. The wrench stays in place because it bottoms on the nut, actually gripping it on four sides. This feature makes the wrench especially effective on damaged nuts having burred or rounded corners.

The tool can be procured in three sizes:

Size	Adjustment range	FSN
8-inch	1/4" to 1"	5120-740-3379
10-inch	3/8" to 1-1/8"	5120-740-3431
12-inch	7/16" to 1-7/16"	5120-740-3438

An added advantage is the upward offset handle that provides excellent knuckle clearance. All in all, the Adjust-A-Box is an all-around utility wrench that should be a welcome addition to any tool kit.



MAGNETIC PLUGS AND CHIP DETECTORS

Magnetic plugs and chip detectors are not new. The airlines and the military have used them successfully over a long period. They collect and hold the ferrous particles that would otherwise circulate freely in the lubrication system scoring bearings, bushings and race-ways, gears, cylinder walls and other critical parts. We recommend them to you.

Magnetic plugs are quite like other plugs except that a powerful permanent magnet is anchored in the plug body to trap the ferrous particles until the plug is removed and cleaned. Chip detectors not only trap the abrasive particles but also warn against internal breakdown before inflight failure. The steel body of the detector, in combination with the magnet, sets up a powerful magnetic field which forces the ferrous particles to bridge the electrically insulated gap between the magnet and the detector body. This completes an electrical circuit which can be ground checked with a continuity tester or permanently wired to activate a warning light on the instrument panel.

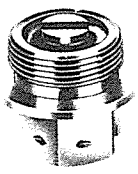
The sensitivity of the detector is determined by the width of the gap. In a reciprocating aircraft engine it is desirable to have a fairly wide gap, say .12 inch, since a certain amount of ring fuzz is normal and does not justify a positive indication.

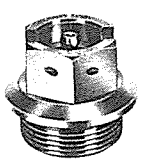
In some models of aircraft turbine engines chip detectors are used in five locations, the scavenger oil filter, the pressure oil filter, the front and rear transfer gear cases and the thrust reverser filter. A more sensitive chip detector is required here, – suggested gap approximately .10 inch.

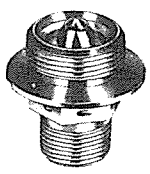
In certain applications such as constant speed drives, an even more sensitive chip detector is preferred, because in these drives very fine metal chips should be recognized as indicators of abnormal wear. Here a gap of approximately .04 inch has been used.

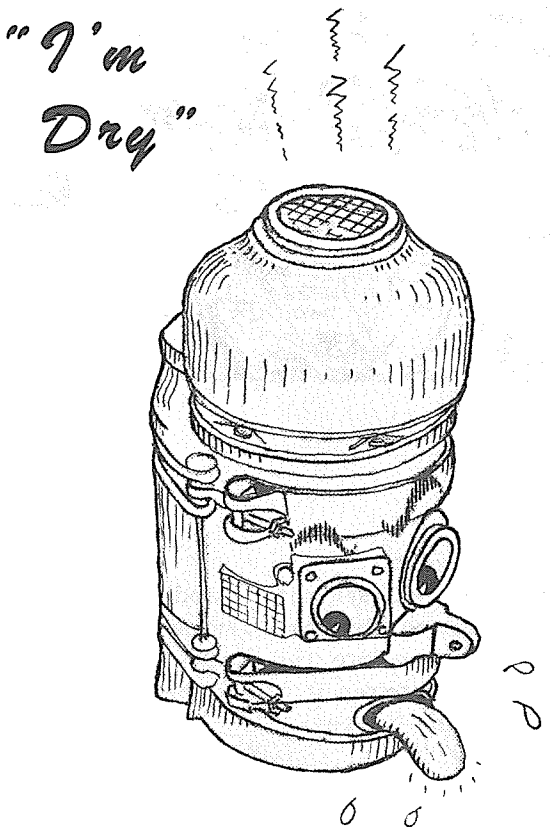
Magnetic chip detectors are designed to work with the 24 volt electrical system commonly used in aircraft. However lower voltages may be used satisfactorily.

-Courtesy of the Lisle Corp









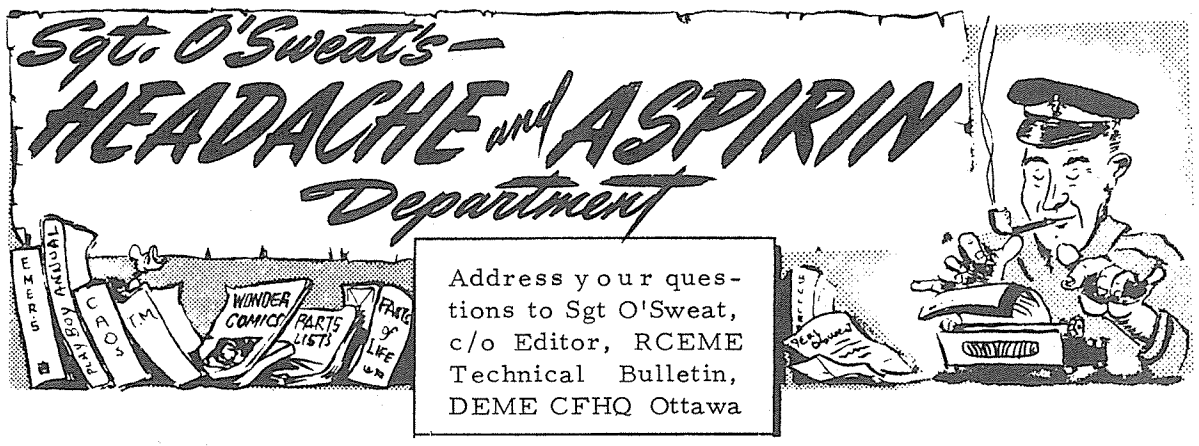
CAR, FERRET, MK 1 GENERATOR GEARBOX LUBRICATION

Reports have been received that Ferret generators are failing due to lack of lubrication in the generator gearbox.

This condition arises when vehicles sit idle for any length of time, as the oil drains out of the generator gearbox.

When a Ferret armoured car has been idle for a period of one week or more, or if a generator is being replaced, a 1/4 pint of engine oil must be poured through the oil filter hole before starting the engine.

An amendment to the Crew Servicing Pamphlet for the Ferret (7610-21-111-8095) will be issued, detailing the lubrication of the generator.



Dear Sgt O'Sweat:

Reference Instrument Mod Instr S 149 some trouble may be experienced with the "O" ring being drawn into the multi-start thread. If this is encountered it will be found that lack of grease is the cause.

S sgt RC Brimmage
2 Field Workshop RCEME

Dear S sgt Brimmage:

We have had some official complaints of this fault and the engineering investigation is not yet completed. We would welcome further opinion from the field as to type of grease and effectiveness of this solution under all conditions of use.

Sgt O'Sweat

Dear Sgt O'Sweat:

On the C1A1 and C2A1 Rifles sometimes the pistol grips are still loose even after the screw is tightened to the limit of its travel. It would appear that either the wood has shrunk or the threaded sleeve inside the pistol grip has pulled up slightly in its seating.

Cpl RAC

Dear Cpl RAC:

File approximately 1/32 inch from the face of the threaded projection on the body. This will allow the pistol grip to bear on the body with no side play when the screw is tightened.

Sgt O'Sweat

Dear Sgt O'Sweat:

Even after application of Loctite to F N Rifle locking shoulders some of them seem to come loose again. In all cases the application was in accordance with EME Manual Weapons C 829 Instruction 3 Issue 1.

Cfn VR Loner

Dear Cfn Loner:

It would appear that the amount of looseness in the locking shoulders sometimes requires a higher viscosity grade of sealant than the manual calls for. (This has been referred to the technical section concerned for consideration).

In the meantime, when locking shoulder movement appears excessive you might try a heavier viscosity in accordance with EME Manual Miscellaneous Equipment P 300. I would suggest AV as the grade but you will have to be guided by your own experience and the amount of movement.

Try removing the parkerizing from both the hole and locking shoulder too. And of course as always with this type of sealant clean thoroughly. Oil is a deadly enemy of this stuff.

Sgt O'Sweat

Dear Sgt O'Sweat:

Since my last letter I have discovered some more facts about compression gauges which use a valve core as a non-return valve. The people who make the Snap-On compression gauges say that you should not use a tire valve core in their gauges. They sell a service kit

(continued on next page)

. . . of GRADE 8 and M SCORE 130

By Capt JGR Doucet

For about one year now 5 Coy RCEME has been involved in a program of Corps Transfers to RCEME in Eastern Quebec Area. This program was undertaken at the expressed desire of the Area Commander. For he soon realized that especially in non-RCEME units employing RCEME tradesmen there were "many Chiefs but very few Indians" in the vehicle trade. This situation of course is not new and has been with us for at least the last four or five years.

The Area EME and his staff therefore set out to interview a large number of interested candidates mainly from the Vandoos and Service Corps. We soon came up against a few problems. For one, few candidates were bilingual enough to attend a Vehicle Mechanic Group 1 Course at The School. This problem was graciously solved by sending unilingual corps transfers to Ecole de l'Automobile. This aspect is of course restricted to this Area.

Most of our other problems rotated around the famed "Grade 8 and M 130". Standards and statistics have this characteristic – they largely forget the human aspect: Such unimportant things as motivation, maturity, interest and even enthusiasm! It would appear and it is no doubt true that to progress to group 3 level a potential vehicle mechanic must have completed grade 8 and have an M score of 130. But why should everybody who enters RCEME in the vehicle trade have to reach group 3 level, come what may? Is this not equivalent to saying that every officer in RCEME must reach the rank of Major? (on a different scale of course). Are we not just turning the crank?

There are a number of soldiers, especially in the Arms, who are well motivated and interested in the vehicle trade. In a lot of cases they have been working in Transport Sections literally keeping these open along with a RCEME NCO or WO. They may not be university graduates but they want to learn and they have sown their oats.

Why can't Grade 8 and M Score 130 be compromised and RCEME accept a certain ceiling of groups 1 and 2 in the vehicle trade? A blind corps transfer program of soldiers below 130 and grade 8 is not what is being advocated here. There must be careful and controlled selection. And with the new fresh intake, this may not be the proper time for such a plan. But will this new fresh intake stay in long enough that this plan will not be workable a few years from now?

Without being pessimistic the present situation of vacancies in the vehicle trade is likely to repeat itself. For someone who has been working with vacancies in the vehicle trade for the last four or five years it is difficult to believe that the answer is not the Arms.

(We feel that 5 Coy should be commended for their efforts to overcome their shortage of vehicle mechanics.

Although it may not be Corps policy to employ vehicle mechanics lacking the education necessary to become 'Chiefs', at least 5 Coy will have some 'Indians' to carry the workload, and 'bring home the pemmican'.

It will be interesting to watch results of this selection over a period of years. -Ed)

(SGT O'SWEAT continued)

and the part numbers and prices are:

MT-24 DR Service Kit	.80¢
Consisting of:	
MT-23-3A core tip	.36¢
MT-24D-1 valve core	.22¢
MT-26-2-2A sealing ring	.14¢

The valve core is used with all Snap-On compression and vacuum gauges; also on such items from Wiedenhoff (now owned by Snap-On).

S Sgt AE Wallace
CFHQ

Dear S sgt Wallace:

Thank you for the additional information. I hope this will encourage others in the field to tell us about the problems of the other types of gauges.

Sgt O'Sweat

Dear Reader:

This is all the mail we got this time. It's not very much and I am sure there are a lot more questions and suggestions. Please start them coming. Otherwise I shall have to do some work to justify my existance or perhaps defect to the Navy?

Sgt O'Sweat

PROGRAMED INSTRUCTION

By Lt RE Betzner

The insistance of our society that universal education is a fundamental of modern civilization has led to a concern about the level of education necessary. Consequently, the numbers of students requiring an education is presenting an ever-increasing problem of instruction. The teacher is now faced with maintaining individual instruction for larger and larger classes. With the development of programed instruction, a solution appears possible.

In general, there is a common misconception concerning the use of programed instruction. Programed instruction, more commonly referred to as the teaching machine, is not intended to replace the human element in the classroom. On the contrary, this method of instruction has been carefully planned to amplify the student-teacher relationship.

The means by which programed instruction will assist in solving this problem may be clarified by discussing the distinctive properties of this type of teaching.

First, continuous active student response is required, providing explicit practice and testing of each step of what is to be learned.

Second, a basis is provided for informing the student with minimal delay whether each response he makes is correct, leading him directly or indirectly to correction of his errors.

Third, the student proceeds on an individual basis at his own rate – faster students romping through an instructional sequence very rapidly, slower students being tutored as slowly as necessary with infinite patience to meet their special needs.[1]

The pupils are motivated and inspired through teacher enthusiasm. The teacher's instruction and guidance should help the students to discipline themselves, and realize through independant study and work that learning from programed material is in large part their own responsibility.

[1] Lumsdaine, A. A. and Glaser, Robert, Teaching Machines and Programed Learning, National Education Association, 1201 Sixteenth Street, Washington, DC, 1960, p 6.

THE TYPES OF SELF INSTRUCTIONAL TEXTS [2]

Linear, or Skinnerian Method

The student encounters the questions in sequence. The questions are designed so that error is a minimum and each question contains some cue or reference to previous work.

Example:

1. All matter has mass.
2. Air has mass, therefore air is _____.

Answer: "matter".

The information is presented in small steps, with the questions requiring constructed answers by the student.

Scrambled, or Crowderian Texts

The pages of the book are arranged in numerical sequence but the student does not read them in this sequence. The student begins by reading a short paragraph on the subject being presented. At the end of this paragraph will be found a question requiring the selection of an answer from a multiple choice.

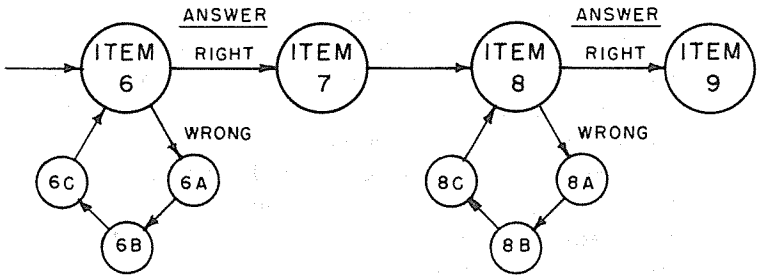
Depending on the answer selected the student is guided to another page in the text. If his answer is correct he will find a new paragraph and another question. If his answer is incorrect, the material covered will be reviewed and he will be instructed to return to the original question and select another answer. This method differs from the Skinnerian method in that the material is presented in larger steps and the questions are of the multiple choice type rather than the constructed answer type.

Branching Texts

In the branching format an incorrect answer sends the student on a detour of questions which lead him back to the original ques-

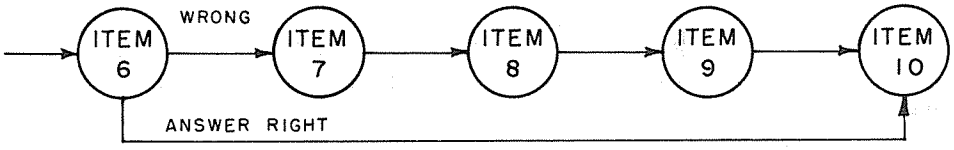
[2] Self-Instructional Text on Programed Instruction, US Army Southeastern Signal School, Fort Gordon, Georgia, 1962, No. ITCA/6-LI-LP1-SIT.

tion. This style may be used separately or in conjunction with the linear or scrambled texts.



Looping Texts

A looping text is one in which the choice of answers determines the new material to be studied. The questions are test questions to check the previous background of information before the student begins new material. This style may also be used separately or in conjunction with the linear or scrambled formats.



Mathetics Method

The mathetics method is somewhat similar to the linear method in that the material is presented in sequence. The linear method uses cues to indicate a required answer. (See the example given for the Linear method). The mathetics method, on the other hand, gives the complete picture first. Then the stimuli are removed one by one with each succeeding question until the complete original statement must be repeated from memory.

Example:

1. All matter has mass. Matter occurs in one of the gas, liquid, or solid states.
2. All _____ has mass. _____ occurs in one of the gas, liquid, or solid states.

Answer: "matter", "matter".

3. All matter has _____. Matter occurs in one of the gas, liquid, or solid states.

Answer: "mass".

4. All matter has mass. Matter occurs in one of the _____, _____, or _____ states.

Answer: "gas", "liquid", "solid".

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n. _____ _____ _____ _____. _____ _____ _____ _____ _____ _____, _____, _____ _____ _____.

Answer: All matter has mass. Matter occurs in one of the gas, liquid, or solid states.

The Mathetics method is best suited for memory work.

AN EXPERIMENTAL PROGRAM IN COMPUTERIZED TEACHING MACHINES[3]

The linear type of programs discussed in the previous section assist the teacher in his work. However, the difficult job of guiding, observing and grading still lies heavily on the shoulders of the teacher employing these aids. The implementation of computers into the field of programed instruction has given this method features which may revolutionize teaching.

The logic function and memory capacity of the computer have been used along with a carefully designed program to obtain an interaction between the student and the teaching machine which was not possible with the programed texts discussed previously. This interaction gives the computer a role which parallels that of the human tutor in guiding, counselling, admonishing and rewarding the student. Although for this function predetermined statements are recorded in memory, these statements are drawn from memory to give guidance according to the needs of each individual student.

(continued on next page)

[3] Uttal, William R, My Teacher has Three Arms, International Business Machines Corporation, Thomas J. Watson Research Center, Yorkton Heights, New York, Research Paper No. RC-788, 1962.

LETTERS

Sir:

I did not have any comments on the circulation of the Technical Bulletin when your questionnaire was distributed, but since that time have had occasion to speak to RCEME recruits being trained by the PPCLI Depot in Hamilton Gault Barracks, Edmonton.

The PPCLI Depot has only recently started training RCEME recruits, and by arrangement with the Depot CO, 13 Company RCEME is conducting the corps history periods of Recruit Training. During these periods it became evident that these recruits did not have any real sense of belonging to the Corps. The conduct of corps history lectures by the local static company gives these soldiers some contact with their Corps. It is considered that if the Technical Bulletin were on distribution to the Arms Depots engaged in RCEME Recruit Training, these recruits would gain some knowledge of the organization and activities of the Corps prior to actually joining a unit of the Corps.

Along these same lines, and since I realize you are always looking for material for publication, many of the present members of the Corps might benefit from a series of articles describing the organization and functions of the various static companies, the base workshops, and possibly the field workshops as well as the RCEME elements of other corps units. Ideally, these should be written in a standard format and by, or under, the direction of the CO of the unit. I am quite prepared to do this for 13 Company RCEME if this idea has any merit, but will take no action unless you wish me to do so.

Major KR Joslin, CD
Edmonton, Alta.

PROGRAMED INSTRUCTION continued

Along with controlling the reading of the student from a special text, the computer presents tests and exercises, all the diagnostic material required when the student is not performing adequately, and the specific directions about where the student proceeds next. Thus the teacher has at his means a tool which not only assists in guiding the students but constantly reports the progress and grades of each student.

There is still a considerable amount of work to be done concerning both the psychological and economical aspects of the computerized teaching machine. However, with the present and probable greater future demand on the teachers and students competing with the technical revolution it would appear that computerized teaching methods will soon be a part of everyday life.

The Army has shown some interest in the use of programed instructional material. At present, the TEMAC[4] linear material on mathematics has been obtained for use by personnel studying for the pre-group 4 assessment examinations. These manuals have been studied by various personnel throughout the Corps from which varied opinions have been obtained.

Programed instruction has been used quite effectively to give courses in trouble-shooting by the US Army. Some large industries have used it to give refresher courses to technicians. Under properly controlled conditions this technique has been proven to give a high standard of training quickly.

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[4] See April 64 RCEME Technical Bulletin for article on "TEMAC" by Capt WJ Shearing.

Sir:

This copy of the RCEME bulletin took until 9 Aug 65 for nine persons to see. It would be interesting to calculate the time it would take statistically for all RCEME members to see a copy based on the number of copies produced and the dates that the answers to your questionnaires are received at CFHQ.

Suggest that the quality of the paper used in this publication be reduced, even to newsprint if necessary, and greatly increase the copies in circulation. It is felt that the aim of the bulletin would be achieved on a much broader scale.

Maj RDL Connell
Rivers Camp, Man.

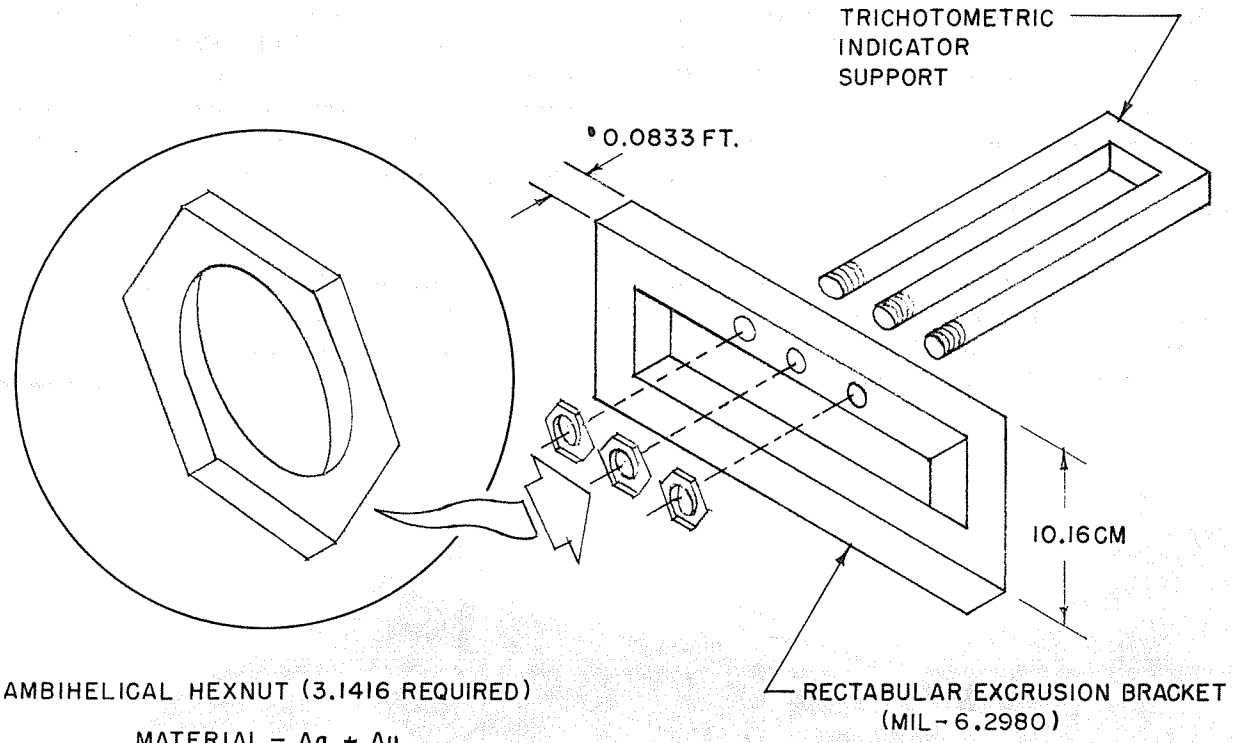
(It says a lot for the quality of the April Technical Bulletin when it took 9 men 14 weeks to read it collectively.

DEME Stats are planning on feeding the facts to a computer and will have some answer soon to your 'statistical' question. -Ed)

SPACE-AGE INSTRUMENT MACHINIST TRADE TEST PIECE - GP 7X
(Not Authorized for Tri-Service Application wef 31 Sep 65)

Inquiries concerning the mounting of the Trichotometric Indicator Support indicate that some difficulty is being experienced with the brackets which attach the support. As an aid toward fabricating the support brackets the accompanying illustration is provided to show the type of material as well as the dimensional data needed. It will be noted that in attaching the bracket to the support, a special ambihelical hexnut is used. The application of this nut is unique in that any attempt to remove it in the conventional manner only tightens it. Because of this design, the nut must be fully screwed on before it can be screwed off.

-Courtesy NAA "Operations & Service News"
(From Approach, May 1965)



When fabricated by hand it has proven of value to produce the LEFT HAND thread portion of the NUTS by using heli-coil inserts assembled backwards. If machined on the Victoria U2 milling machine it is advisable to disconnect the lubricating pump from the vertical drive of the dividing head, failure to do so makes the helix angle of the internal ground thread end abruptly; this factor is accentuated by the illusory effect. Difficulties in reading the sketch in poor light can be remedied by blanking half the component drawing until prepared to bore the holes. Successful candidates (there is no written portion of the trades test) should consider remaining in the service; careful research has indicated that such persons will (in the long run) be able to do as well in the new integrated forces as they could hope to do with any industry so far consulted. Experimental efforts to pressure-form the nuts in lieu of maching will be reported upon at a later date.

(Contributed by the Grey-Haired Warrior from 8 Coy and Uncle Toonoose of 2 Fd Wksp after consultation with A. E. C. L. and C-I-L.)

8 COMPANY RCEME FRP

CAMP PETAWAWA MILITIA CAMP 1965

The Militia returned to Camp Petawawa in 1965 for the first time since 1959. During the period 27 Jun - 10 Jul, 25 armoured, artillery and infantry units underwent corps training. A tented camp was constructed on the Mattawa Plain; 8 Coy RCEME was given real estate in the area as well as responsibility for operating the Forward Repair Platoon in support of the Camp. By 27 Jun, this real estate was developed and staffed as shown in the accompanying photographs.

This field operation by 8 Coy was a joint effort – as was the 21st Birthday Party – (see page 34 of Jul 65 issue) in conjunction with 2 Fd Wksp. Their contribution was tradesmen, equipment, accommodation and co-operation.

During the planning stage of the FRP it immediately became evident that a static workshop similar to 8 Coy could not provide the wherewithall to operate such a repair group. For example, it had no field accommodation; no lubricating equipment; no tels inspection and repair equipment; and no mobile repair equipment to effect repairs in situ at the training area.

The FRP expended 2092 hours in direct labour from a strength of 18 while providing RCEME support to SMP and SC vehicles, M4A2 tanks, generating sets, telephones, wireless sets, power supply units, headsets, switchboards, etc. This FRP did not hold an imprest stock of spare parts because of its proximity to the static workshop. An expeditor picked up parts as needed from the SPSS which provided 24-hour service.

Back row (l to r): Cfn EJ Fry, Cpl R Beauchamp, Cfn RN Rosen, Cfn AR McCooeye, Cfn J Procee, Cfn TA Potter, Cfn KF Yetman, Cpl EJ Powell, WO2 AM Kirkpatrick.
Front row (l to r): Cpl AJ Bourque, Cpl RE Hiscock, Sgt E Richardson, Cpl J Darch, Cpl JAR Lafontaine, Cfn JJ Crepeau, Cpl GP Gannon.

FRP Site →

ALDERSHOT SHELTER FRAMES

A suggestion was received through the Suggestion Award Committee for a method of repairing the frame and legs of Aldershot Shelters.

The break usually occurs at the ends indicated at A Fig 1, below. The recommended procedure to repair such a break is as follows:

a. Fabricate the part in accordance with Fig 2 below.
b. Trim the broken component as required.
c. Push the fabricated part (Fig 2) into position and drill a 3/8 hole for a pin.
d. Fabricate a suitable pin, drive into position and rivet ends enough to prevent falling out.

The principal of this repair may also be used to rejoin broken sections in any part of the frame such as indicated at B Fig 1.

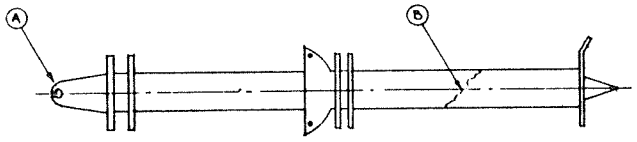


FIG. 1

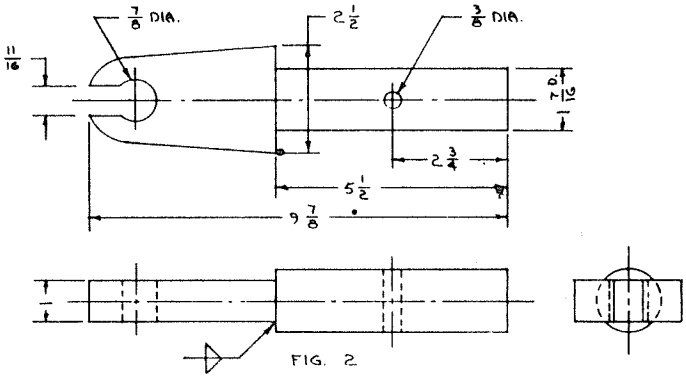


FIG. 2

SUGGESTIONS RECEIVED

The following suggestions have been submitted by military or civilian personnel in the Corps. Some will be adopted and many will be 'shot down' for various reasons. However, they are the best evidence that RCEME people are constantly using their heads.

These files were received in DEME during July to September. The publication of the particulars here does not in any way imply their acceptability.

Suggestor	Suggestion
S sgt E Porter 2 Bn Cdn Guards	Modification of Spanner to simplify stripping and assembling of FN Rifles
Sgt JF Madden S sgt WC Ross 2 CIBG	Modification to Vibrator in the Power Supply, Vibrator, MK 2, No 12
S sgt GW Gibson 2 Coy	Modification to frame and leg assembly of Aldershot Shelter
Cpl DR Pecore 2 Fd Wksp	Replace crystal replacing tool with the Electro Vice now in use by the trade
Mr Alec Smith 27 COD Wksp Br	Tool for pulling the Hub Fan Drive Pulley off the 3/4 ton SMP Dodge Engine

SUGGESTIONS continued

Suggestor	Suggestion
Sgt JS Woodward 202 Base Wksp	Tool for installing the Sealing Wiper Ring of 20 Pdrs
Mr Donald McIntosh 27 COD Wksp Br	Safety Device to prevent damage to vehicle engines due to loss of oil or oil pressure
S sgt SB Ross 2 Fd Wksp	Modification to protect against reverse polarity applied to Power Supply No 12 MK 2
Sgt RA Kellier 215 Wksp RCEME	Modification to the tail-pipe of the Armoured Personnel Carrier M113A1
Mr FW Harper 27 COD Wksp Br	Adapter to prevent wheel slippage when using the Henderson AW Tire Changer
	3 different suggestions for safety devices and fixtures for the Joyce Model L2T Jack
Mr GH Beam 27 COD Wksp Br	Tool for the removal and replacement of Switch Plunger Spring on starter of 1/4 ton and 3/4 ton SMP vehicles
	Method for replacing the output receptacle on Generators 1/4 ton, 3/4 ton, 2 1/2 ton and 5 ton SMP

HARD SURFACING, BUT NOT HARD GRINDING

A new Fuseweld process has taken much of the grinding out of hard surfacing a filter piston at the Indiana Welding & Machine Co, Indiana, Pa. And the new method is faster and more economical.

Hard surfacing the carbon steel filter with Colmonoy powder used to be done by oxy-acetylene welding. It produced a 78 per cent savings in maintenance, but control of the hard surfacing deposit was difficult to maintain. The new method cleared up this fault with the same savings:

With the piston mounted in a lathe, the first section to be overlaid is preheated to approximately 600 deg F with a gas burner flame. Colmonoy No 5 powder is then applied through the Fusewelder torch. As the hard surfacing material is deposited on the workpiece, it is fused by the torch in an almost simultaneous motion. The lathe headstock is rotated by hand as the work progresses around the piston.

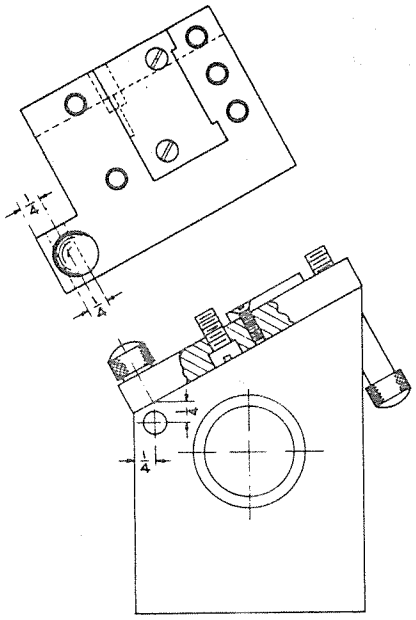
The smoothness and evenness of the deposit shown is contrasted sharply by the overlapping bead deposits of the oxy-acetylene rod welding method.

The hard surfacing material and Fusewelder were supplied by Wall Colmonoy Corp, Detroit.

ADAPTER, STT, C10

A suggestion has been submitted by Cfn RG Charron to drill a 1/4-inch hole in the body of the Adapter STT C10, to facilitate the adjustment for collimation and verticality of reticle, without removing the Telescope, Elbow M92D, from the adapter.

No modification instruction will be issued to introduce the suggestion but authority is granted to drill the hole in accordance with dimensions shown below, if so desired.



SAFETY DEVICE FOR CRANE, PORTABLE, HYDRAULIC, 1 AND 2 TON

By GM Hellard

Mr FP Harper, a Technician 3 with the Maintenance Technique Group (MTG), Workshop Branch, 27 Central Ordnance Depot, designed and developed a Safety Device for the Crane, Portable, Hydraulic, 1 and 2 ton. This portable equipment is for general workshop use in stacking and unloading freight, transferring heavy parts, removing and installing engine assemblies, lifting car and truck drive system components, eg, transmissions, transfer cases, axle assemblies. From an operational viewpoint, these portable cranes perform within their rated capacity operations that often cannot be duplicated with other types of lifting devices.

A long-standing complaint was the manner in which the chain was hooked to the movable extension beam. Suspended stores were often damaged and injury sustained by personnel when the chain slipped. This occurred when the crane beam (boom or jib) was lowered to an angle of approximately 30 deg below horizontal position and lower. While working, Mr Harper noticed a need for a safer procedure to hook the chain on the portable 1 and 2 ton cranes used in the workshop and thus designed and developed a safety device.

This safety device can be fitted to the following cranes:

3950-21-109-3903 Crane, Floor, Portable, Hydraulic, 1 Ton (all makes).

3950-21-109-5705 Crane, Floor, Portable, Hydraulic, 2 Ton (all makes).

No major modifications are necessary to adapt it to the cranes.

This device was evaluated by DEME and the suggestion, considered to eliminate a safety hazard, was adopted. It was implemented by EME Manual Miscellaneous Equipment O 337.

Mr Harper was given an award in merchandise in the amount of $30. He was presented with a Coleman camp stove and an overnight case by Lt Col RHC Hodgson, CD, Chief Workshop Officer.

Mr Harper has had a long and varied career in the automotive industry. He returned to the Chrysler Corporation in Ottawa following his discharge from the Army and remained there until 1947, at which time he went to International Harvester Co of Canada (IHC) and worked in the Ottawa and Chatham branches. Considerable experience was gained in all phases of work, similar to the operations carried out by the AEEE Proving Ground Establishment in Ottawa. He became shop foreman in the Ottawa branch of IHC.

In 1955, Mr Harper came to London and was employed in the Technical Project Section of 17 Coy RCEME (now known as MTG, Workshop Branch, 27 COD) where he is working at present.

Lt Col Hodgson presenting Mr Harper with award gifts. Members of his section attending, (l to r): R Leathorn, GE York, J Cowan, DA Ferguson, W Durrant and AF Moore.

-DND Photo

The author, Mrs Hellard, is the Workshop Branch Historian, and is responsible for the high standard of the Annual Historical Reports submitted since 1957. Her Reports have been rated by the Army Historical Section as the best submitted from The Corps. Editor)

Dis-Integration - 1995 Style

OTTAWA, July 30, 1995 – The Minister of National Defence made a startling statement in the House this week with his introduction of a bill to completely reorganize Canada's Defence Forces.

The statement was met with cries of "impossible" and "for shame" from Opposition benches. The Minister went on to explain to the Commons that the Canadian Forces had reached a stage where a more distinct division of identification is required.

The unorthodox plan calls for the establishment of three separate services. According to the minister, those formations which are normally entrusted with defence of coastal waters will be separated from the present Canadian Forces organization and will be given the title of the "Canadian Navy".

Canada's ground forces will still retain their present operational commitments but will henceforth become the "Canadian Army" in title. The Air Defence organization will become the "Canadian Air Force". Once assent is received from the Queen the prefix of "Royal" will in all probability be granted to the Navy and the Air Force in keeping with tradition.

When the minister brought up the subject of tradition and moral of the present Canadian Forces, a backbencher of the Opposition immediately took to the floor and said that the proposed plan was entirely contrary to the traditions of the existing Canadian Forces which came into being some 30 years ago.

What really got the House going was the Defence Minister's mention of distinctive uniforms for the three proposed services. "To give the sailor, the soldier and the airman a separate identity completely, each service will adopt its own uniform" said the Minister. "Along with the uniform will go new rank designations as well and I am sure that this will add to the morale of our servicemen, even though it is at an all-time high for the present", the Minister went on.

Questioned as to just what was proposed in the way of ranks, the Minister answered that for the Air Force for an example, officers engaged in flying would be known as "pilot officers and flying officers", a most practical designation considering their occupations. Those officers in the Air Force who commanded flights would be known as "flight lieutenants" and those leading squadrons would be called "squadron leaders" and so on up through the chain of command. "The whole thing makes sense" said the Defence Minister.

The Minister of Defence Industry rose to support the introduction of the new bill by stating that since 1964, when the last reorganization of Canada's defence forces took place, so much had been saved in the way of defence expenditures and defence material, that setting up of three new services would use up this surplus as well as costing an extra $500,000,000. This extra expenditure would eventually end up back in the pocket of the tax payer and would go hand-in-hand with the Prime Minister's recent plan for the "surge forward of the Canadian economy" which is now being implemented.

The Defence Industry Minister also explained that because of the establishing of three separate services, new camps and base installations will be required across Canada and a large increase in civilian employment will result.

Comments pro and con were forthcoming from many persons within the framework of the present defence organization.

The Comptroller General of the Defence Forces was one of the critics of the bill. "I don't know how we will ever get rid of all that burple coloured long underwear now" said he. He was obviously referring to the 100,000 sets of underwear that was left over from integration of the services back in 1964 and which was dyed with the new Canadian Forces colour at that time called "burple".

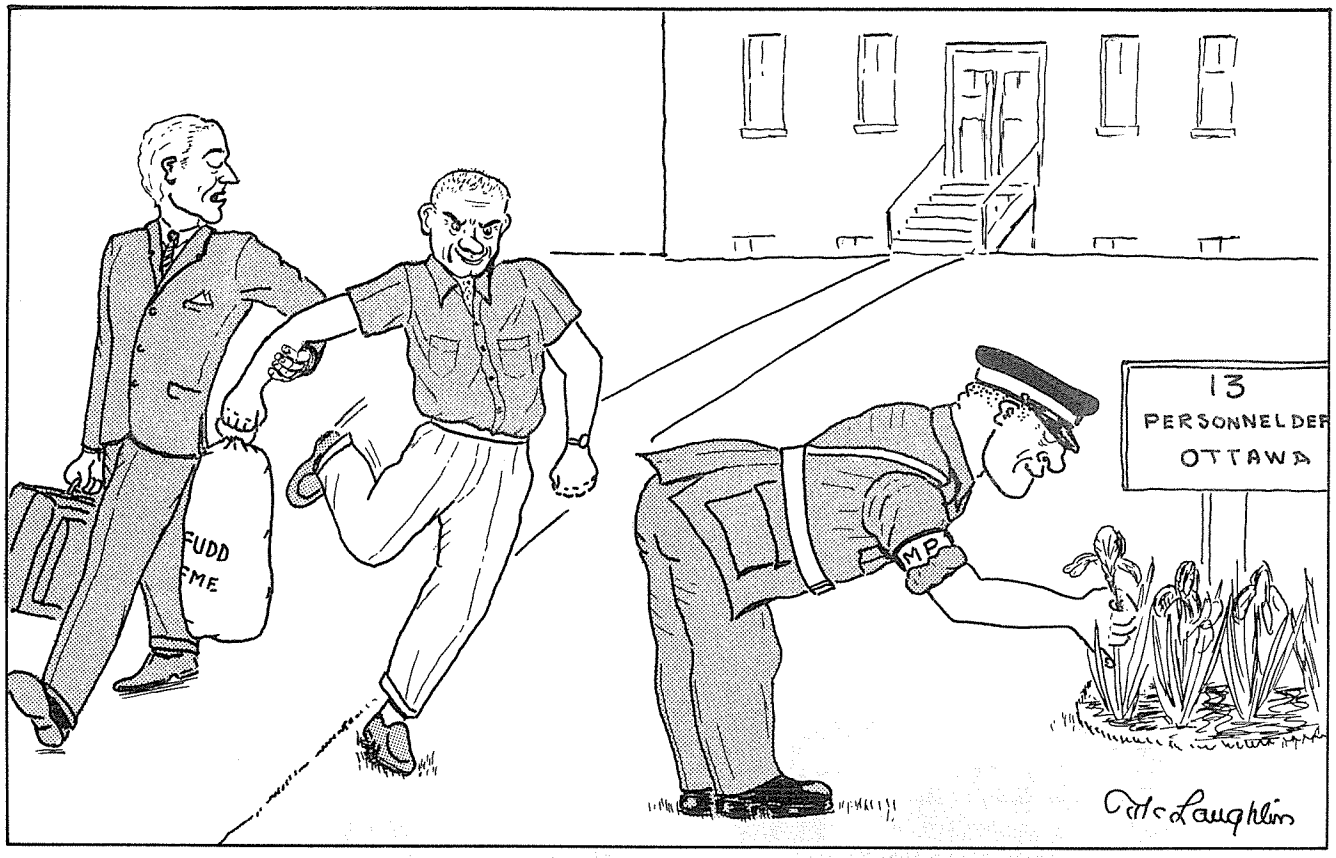
The Defence Minister in reply to the Comptroller General's criticism was quick to point out that the surplus stocks that will result in the new plan as well as the present Canadian Forces uniforms can be given to Canada's reserve defence forces. "There are a lot of traditionalists who will fight this thing" said the Defence Minister, but the Government is behind my bill for reorganization 100 per cent. Anyhow, I have just announced the Comptroller General's retirement."

It is presumed that the plan will call for an overall increase of ten thousand personnel in each of the three services and that retirement age will be increased in most cases until the new manpower ceiling is reached.

It is hoped by defence experts that the plan will be completed by the year 2000. In foreign circles, the proposed plan has met with mixed feelings.

The United States says that they will be watching developments with interest. Great Britain has remained mostly non-commital while TASS, the Russian news agency, came out with an editorial calling the whole thing an imperialistic plot, as well as the stealing of an idea originally fostered by their own Russian defence experts.

-The Beaver



NO, NO, MACFUDD, NOT EVEN IF YOU HAVE JUST RETIRED!

To better understand the above, it is necessary to know that our hard-working and most obliging artist has retired. Major HE McLaughlin, together with his two 'characters' Cfn McFudd and HIS long-suffering corporal, have exchanged their uniforms (with the beloved RCEME insignia) for the less formal clothes of civilian life.

As they emerged from 13 Personnel Depot, Ottawa, the urge to 'get even' was almost too much for McFudd. But, so far as we have been able to ascertain from the Provost, the ex-corporal was successful in restraining him. The genial major, just out of the picture on the left, no doubt was looking the other way as McFudd took deadly aim at his old enemy, the gentle, orchid-loving MP.

For the information of his host of friends, Mac is 'trailering' to Victoria (probably there by the time this is printed). He wrote from Banff: "We are having a grand trip... Going to the Okanagan... Don't know when we'll reach Victoria. This way of life is habit forming."

Best of luck to you, Mac, and let us see how your pals are making the change to civilian life.

WHAT IS IT?

At first glance this would appear to be a master Rube Goldberg creation but it is proving to be worth its weight in gold to a RCEME tradesman which in fact is not such a broad statement as the cost of this item is approximately $55,000, and its only function is to test the General Electric T58 gas turbine engine under all operating conditions.

The T58 gas turbine powers the Army medium transport CH113A helicopter and its the job of the AC technician (Lcpl C Taylor) to periodically check the performance of the engine under variable power and load settings. Instrumentation provided inside the control cabin enables over 50 tests to be done on the engine under test, namely measuring the engine gas generator and power turbine speeds, vibration, lube oil pressures and temperatures, fuel pressures and the engine gas temperatures.

This takes the guesswork out of maintenance, and enables an accurate decision to be made on the serviceability of the engine and subsequent safer operation of the aircraft. See page 41 for answer.

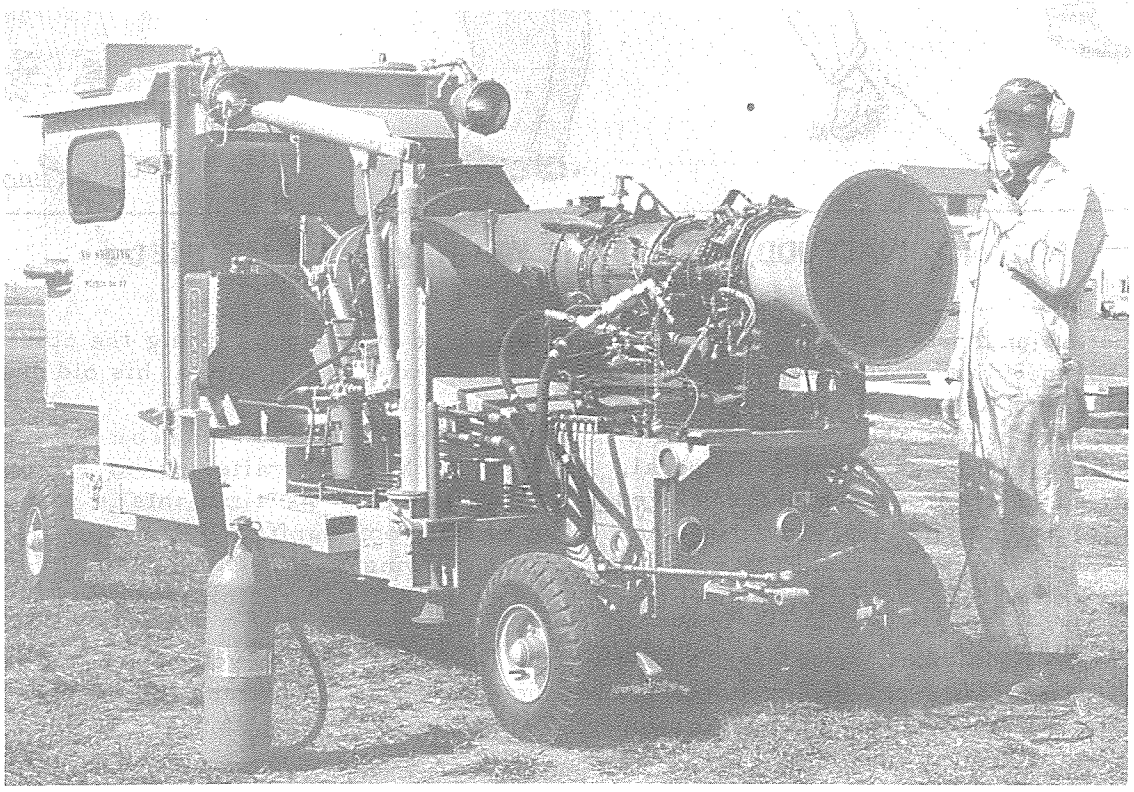
TECHNICAL TEASER NO 1

Rutledge and Leo are inseparable cronies in the welding department. After work, they duck into a nearby pool hall on their way home from work for a few games. Each time, they toss a coin to see who will break. The odds are just even that Rutledge will win the toss at least four times. How many games have they decided to play?

TECHNICAL TEASER NO 2

When the new foreman ordered a complete clean-up in the machine shop, old Ludwig found 20 objects. Of these, 7 were marked, 7 were salvageable, and 7 were tools. There were 3 marked tools, 3 salvageable tools, and 3 marked-and-salvageable items. But only one of these objects was a marked, salvageable tool. How many objects were neither marked, nor salvageable, nor tools?

NO 1: Seven games. NO 2: Seven. All told there are seven tools, plus two salvageable items, plus two marked and salvageable items – a total of 13. That leaves seven of the 20 objects unclassified.



ICI ON NE REPARE PAS LES CANONS ON LES FAIT!

Par le Capitaine JGR Doucet - 5 Cie RCEME

Tus ceux qui ont déjà visité la ville de Québec, surtout ceux qui ont un apanage militaire, auront certainement remarqué les canons historiques et les mortiers répartis ici et là à travers la ville.

Ce qu'ils ne savent peut-être pas quand même, c'est que le travail de recherches des canons enfouis dans le sol québecois, le travail technique de les mettre en bon état et de les déposer sur une structure de bois convenable fut l'oeuvre du RCEME. Et oui! une fois de plus et ce dès 1954.

Beaucoup d'ouvrage fut fait dans le temps sur ce projet et les intéressés se reconnaitront sûrement. Grâce à eux, il existe maintenant un plan de localisation des pièces d'artillerie et un plan d'entretien. Notre mérite se résume à profiter de leur expérience et à rebâtir quelques bases en bois de chêne à l'occasion.

C'est précisement ce que l'on voit sur nos photos où le premier de trois berceaux construits à l'Atelier 203 de St-Malo est déposé à la Citadelle.

Et n'ayez crainte tous ces projets depuis leur début sont dûment autorisés!

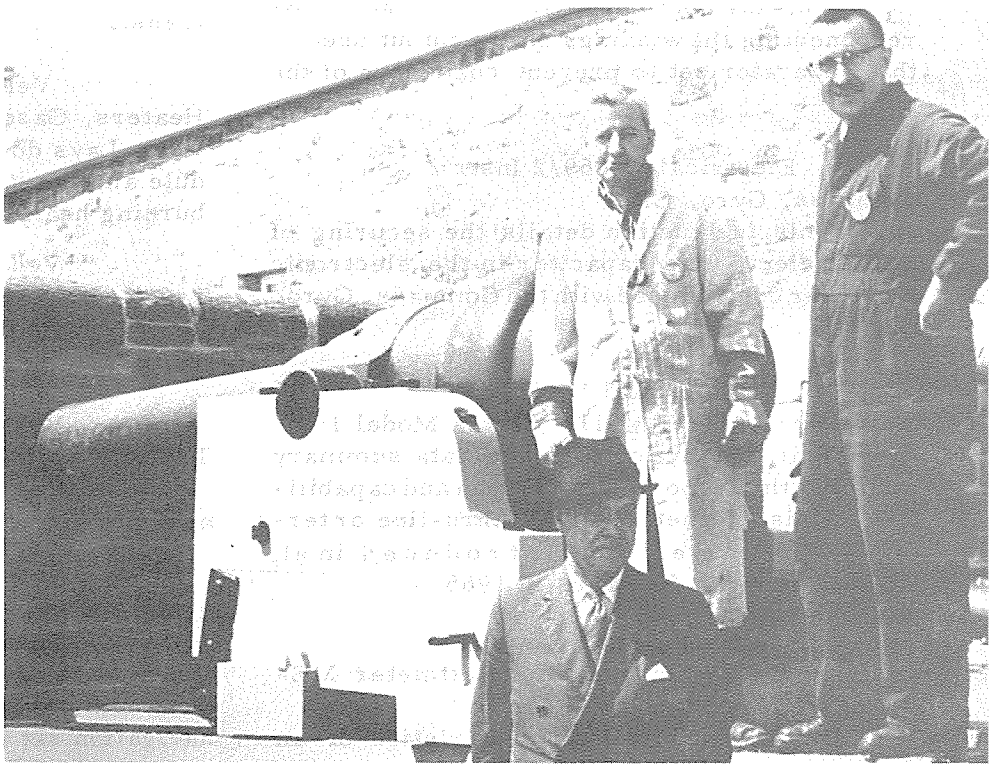
[All who have visited the city of Quebec, especially those with a military background, have certainly noticed all the historical guns and mortars scattered throughout the city.

What they perhaps do not realize is that the job of recovering these guns from Quebec soil plus the technical job of repairing and placing them on suitable wooden structures has been the work of RCEME ever since 1954.

Much work was done during this time and those involved will certainly remember. Due to their efforts, there now exists a location plan and a maintenance system. Our job now consists of profiting from their experience and of occasionally rebuilding certain oak bases.

This is precisely what is seen on the photos as the first of three cradles manufactured in 203 Workshop RCEME is deposited in place at the Citadel.

We assure you that all these projects since the beginning were duly authorized.]



L'ex-Major Belleau (au bas) Conservateur du Musée de La Citadelle recoit la première structure de bois des mains de l'artisan luimême, M. Angers (à droite) et M. Cloutier son assistant.

[Ex-Major Belleau curator of the Citadel Museum receives the first wooden structure from the craftsman himself, Mr Angers and his assistant Mr Cloutier.]

EME MANUAL ISSUES

Electrical I 167 Instr 5
Radio Set CPRC-26

Details the interim fitting of new microphone element.

Electrical K 450
Amplifier, Audio Frequency, AM-5095/PRC

Defines the purpose, description, and data of the equipment.

Electrical K 524
Tuner, Radio Frequency, Aerial No 6

Details the electrical/mechanical repair and alignment of the tuner.

Electrical L 210/1
Calibration Set, Range, AN/UPM-11A 6625-00-519-3803

This data summary outlines the purpose, description and accessories of this equipment.

Electrical R 717 Instr 1
ATGM Simulator DX43 and DX44

Supersedes previous issue; it details the addition of a protective device to guard against reverse polarity damage.

Electrical V 139 Instr 1
Generator Set, 300 Watt, PU-5008/U

This instruction details the procedure for reconnecting the windings on the cutout used on this generator set to prevent chattering of the points.

Electrical W 659/2 Instr 2
Compass, Gyro, C2

This instruction details the securing of a fixed electrolyte capacitor in the electronic amplifier control used with the Compass, Gyro, C2.

Electrical Y 150/2
Wattmeter, AN/URM-120 (Sierra Model 164)

This instruction is a new data summary outlining the purpose, description and capabilities of this wattmeter. It is a thru-line or terminated wattmeter being introduced in all RCEME telecom facilities in 1965.

Electrical Y 180/2
Adapter, Test, Attenuator, Wattmeter ME-5006 ( )/U

Details technical characteristics of an adapter which extends the capabilities of the Audio Wattmeter ME-5006/U to meet repair requirements of high power audio equipments such as loud hailers and PA systems. The adapter will be issued to RCEME workshops in Oct 1965.

Electrical Z 330/1
Generator, Signal, SG-5042

Data summary describing the instrument, showing power requirements, tube data, accessories and performance.

Electrical Z 531/2
Test Set, A&B Harness

Operating instructions for the test set.

Aviation Equipment A 004
Distribution of Instructions

This instruction lays down the distribution of instructions in the Aviation Equipment part.

Aviation Equipment A 111 Instr 12
Monthly Accession List RCAF EOs

This instruction notifies all Army users of new and amended EOs during the month.

Engineer Equipment K 757 Instr 2
Bridge, Floating, Light Assault, Class 30

Details the fabrication and installation of new pegs for holding sections in place during transit.

Vehicles A 006 Instr 8
Heaters, Gasoline Burning

Lays down the permissive repair schedule and the standard repair times for gasoline burning heaters.

Vehicles D 117 Instr 42
Truck, 3/4 ton, 4x4 SMP

Details the installation of a simple lock bracket to the vehicle tool box.

Vehicles D 119 Instr 23
Truck, Cargo, 3/4 ton, 4x4

Details the installation of a kit for the navigation set.

Vehicles E 039 Instr 24
Truck, 1/4 ton, 4x4 SMP

Details the installation of a kit for the navigation set in M38 and M38A1 vehicles.

Vehicles N 024 Instr 5

Car, Scout, Ferret, Mk1

Supersedes pages 15 to 18 of previous issue. Changes are marked with an asterisk.

Vehicles N 027 Instr 49

Car, Scout, Ferret, Mk 1

Details change to engine steady plate.

Vehicles T 457 Instr 1

Trailer, Flat Bed, 3 ton, 2 wheel, Carrier Pontoon

Details the fabrication and installation of a cover plate for storage tray.

Weapons X 509 Instr 1

Weaponsight, Infrared

Details as an interim measure a local modification to sight adjustment shield.

General H 041 Issue 3

Provision of EME Services

This manual outlines the various types of EME services available at all RCEME workshops and details the procedure to be followed by all units to obtain these services. The major amendments incorporated in this instruction are:

Transport Pool procedure to obtain RCEME Servicing Section services for scheduled servicing, inspection and repairs to vehicles.

EME Services for Damaged Equipment includes the procedure to obtain repair services for equipment damaged during operational training.

Similar EIS or accessory items of equipment may be submitted in quantities separate from the equipment, ie, tarps from several vehicles may be submitted to the workshop on one CAFC 2149.

Equipment Code Numbers have been allotted for new equipment and obsolete equipment deleted. Projectors and teletype equipment have been allotted new code numbers under the Instrument Generic Group.

General H 045

Provision of Estimated and Actual Costs of Repair for Damaged DND Equipment

Supersedes a previous issue and contains many changes in procedure. Abnormal deterioration resulting from operational training is now included.

Management K 010 Issue 6

Workshop Accounting Procedures

This manual details the forms to be used and the records to be maintained for the control and accounting of EME services provided by RCEME. The major amendments incorporated in this instruction are:

Copy No. 5 of CAFCs 2149 for CAR Numbered equipment removed from an area will be forwarded to the RCEME workshop in the new area.

Similar EIS or accessory items of equipment may be submitted in quantities separate from the equipment, ie, tarps from several vehicles may be submitted to the workshop on one CAFC 2149.

Condemned vehicles and components used as training aids, repaired in accordance with EME Manual General H 058, will be accounted for as Miscellaneous Equipment.

CAFCs 2149 requesting repairs to damaged equipment will be certified by units as accident damage or abnormal deterioration as a result of operational training (EME Manual General H 041). When estimate cost of repairs to equipment damaged as a result of operational training is within the limits of QR (Army) 21.71 2(b) normal repair procedure will apply, a second CAFC 2149 for other repairs is not required. Abnormal deterioration will not be recorded as an accident.

Estimated Completion Dates will be recorded on CAFCs 2149 and units advised after In Inspection has been completed.

Trades and items under Part 3 of Copies 4 and 5 of CAFC 2149 have been amended to show authorized trades and detail items where no entry is required. Civilian contract labour costs will be converted to hours based on the RCEME hourly rate.

Parts costs as shown for SMP assemblies listed in EME Manual Vehicles A 110 will be used for costing workorders.

Trailers have been excluded from the list of equipment to be costed for parts.

Monthly CAFC 2149 for Scaling will apply to base workshops only. Time spent on preservation and modification of aircraft will be recorded as a repair charge against individual aircraft.

2149 Control Identification Numbers have been allotted for all RCEME repair organizations to identify unit repairs and field and base repairs.

(continued on page 41)

who's where

BRIGADIERS

KH	McKibbin	National Defence College

COLONELS

WS	Hunt	Camp Shilo Comd	GW	Thompson	CG/DO
A	Mendelsohn	Material Comd HQ Log Planning Section	KR	Ward	DEME

LIEUTENANT COLONELS

VW	Bethel	C OP R/DGLF	CG	Lawrence	DEME
CH	Betts	AEEE	AHR	Lewis	CO 202 Base Wksp
GW	Bruce	DEME	AGM	Maitland	CASC
DA	Campbell	Director of Maintenance Management (Land)	AL	Maclean	Comd't RCEME School
			JH	MacLean	AEEE
DG	Carlyle	DEME	WJ	Owens	DEE
GG	Cavaghan	CP/DPCP	CG	Provan	EBS Bn
HL	Cohen	AEEE	CG	Racicot	Comd EME Quecom
KF	Collins	AEEE	AM	Reid	HQ Trg Com Winnipeg
BB	Cox	HQ Wescom			
JC	Currie	AEEE	ANP	Roberts	DEME
WH	Glover	Comd EME Eascom	HM	Robinson	Comd EME Cencom
H	Goodfellow	Dept External Affairs with UNTSO (Palestine)	FJ	Sergi	NATO Armament Committee Paris
RHC	Hodgson	D/Comd't 27 COD	JP	Sherren	DEME
EC	Ilott	Sr Proj Offr CL 89 AEEE	DJ	Tidy	DEE
EG	Jones	RCEME School			

MAJORS

J	Adams	202 Base Wksp	BM	Diebert	14 Coy
P	Bateson	4 Fd Wksp	WE	Ellis	3 Coy
JC	Boughton	Mobile Comd HQ Quecom	RF	Fendick	RCEME School
GR	Burton	27 COD	DH	Fraser	Mil Asst Gp Tanzania
FW	Chapman	EBS Bn	JJ	Garnett	7 Coy
HW	Chapman	RCEME School	DV	Geary	CDLS/HQ Tech GP REME
JF	Clarabut	CP/DPCA			
BC	Clerke	56 Cdn Inf Wksp	SA	Girdler	1 Fd Wksp
RDL	Connell	RCEME School	WJN	Haggins	DEE
FE	Cooper	HQ Camp Calgary Garrison	DV	Hampson	DRB Suffield Experimental Station
EB	Creber	COPR/DOSR	HV	Hann	27 COD
JJE	Cuddihey	202 Base Wksp	TR	Heal	27 COD
LA	Daviss	DEE	CB	Hellyer	27 COD

MAJORS

HW	House	DEME
CA	Hurst	CDLS REME School Borden HANTS
AJ	Jeffery	202 Base Wksp
FG	Johnson	27 COD
KR	Joslin	13 Coy
FR	Kaye	HQ Wescom
KT	Kennah	DMM/AMTS
VD	Kenyon	2 Coy
HLM	King	AEEE
NE	Laviolette	5 Coy
JW	Lelacheur	DEE
RW	Libbey	Trg Comd HQ Winnipeg
JL	Loughridge	1 Coy
LH	Love	HQ NB Area
ALD	Macdonnell	CG/D Automation
AJ	MacGillivray	RCEME School
RH	MacLeod	6 Coy
JD	McDougall	DEE
RL	McIntosh	2 Fd Wksp
RA	McKay-Keenan	DRB (Weap & Engr Br)
MD	McKinlay	DEME
CA	Miller	AEEE
CR	Morgan	8 Coy
DR	Mowbray	DEME
DA	Nicholson	13 Coy
PH	North	CDLS London
R	Peters	DEME
HCR	Pfeiffer	Detroit Arsenals
JN	Pinder Moss	AEEE
HA	Popkin	202 Base Wksp
W	Rhodes	AEEE
JA	Richards	Que Comd
RC	Rivers	DEME
M	Ruscher	COPR/DOSR
LA	Sainsbury	Eascom
DA	Saunders	RCEME School
GD	Savage	DEME
IC	Scarlett	DEE
RB	Screaton	DPFM
RN	Shaw	Cencom
WR	Shaw	CP/DT
JO	Sheehan	CJATC - AAMU
WD	Sneddon	RCEME School
WG	Svab	HQ CBUE Incr "A"
AR	Thomsen	RCEME School
JM	Treleaven	CG/DME
JD	Trevithick	AEEE
PA	Tuck	CDLS Washington
RW	Vollett	11 Coy
EA	Williams	CDLS - London
WR	Willing	DGOR (D)
GA	Wright	DEE
B	Yarymowich	HQ CBUE

CAPTAINS

AM	Adams	HQ 4 CIBG
KI	Anderson	CASC
LW	Armstrong	56 Cdn Inf Wksp
NE	Birchard	DEME
JMF	Bourassa	CADEE
GN	Brent	DEME
JE	Brewster	11 Coy
JE	Brown	Mat Com/SAMO
PL	Burcombe	202 Base Wksp
FJ	Burton	DEME
CO	Bush	RCEME School
LN	Bydal	DEME
HD	Byer	LdSH (RC)
JL	Calvert	1 Fd Wksp
JNR	Campbell	6 Coy
WM	Campbell	HQ 3 CIBG
AB	Cantlon	4 Coy
FR	Carruthers	RCEME School
G	Charles	RCEME School
CA	Churchill	AEEE
JE	Coates	DEME
BL	Code	1 Tpt Coy RCASC
JH	Cooper	CJATC
DH	Cumming	RCEME School
PR	Dack	RCEME School
FF	Doherty	CP/DT
JGR	Doucet	CASC
OA	Edmond	56 Inf Wksp
AS	Etter	8 Coy
RJ	Francis	7 Coy
AM	Gilbert	DEME
FB	Goring	1 Coy
RD	Goulding	HQ 4 CIBG
NA	Graham	CP/DPCA
GE	Grainger	AEEE
PM	Graye	FGH
JR	Griffin	202 Base Wksp
WJA	Groom	DEME
PEV	Hansen	CDLS Washington
RT	Hare	11 Coy
JH	Hayward	7 Coy
HJ	Hellard	14 Coy
FA	Hlohovsky	CADEE
O	Howard	202 Base Wksp

CAPTAINS

FG	Hutson	4 Fd Wksp
WR	Hyman	AEEE
ID	Isbester	Mob Comd HQ Quecom
AF	Johannes	CASC
MC	Johnston	4 Fd Wksp
JJ	Kane	4 Coy
DC	Kaufman	27 COD
JR	Kaye	13 Coy
GW	Keays	1 PPCLI
JJ	Klinec	DEME
LA	Leflar	1 RCR
JW	Lowthian	AEEE
WF	Lucano	RCEME School
AM	MacDonald	10 Coy
JA	MacDonald	RCEME School
RMG	MacKenzie	2 Fd Wksp
E	MacMillan	3 Coy
GE	Maguire	RCD
DM	Maher	10 Coy
RB	Manning	1 Tpt Hel Pl RCASC
MG	Masuda	EBS Bn
GD	McCulloch	2 R22ER
AL	McEachern	EBS Bn
JG	Meek	CJATC
HJ	Millen	HQ CC Cyprus
RW	Miller	Mil Asst Gp Tanzania
TME	Mimee	2 Coy
HG	Morgan	8 Coy
JL	Moyse	27 COD
WH	Norton	DEME
JF	O'Connor	202 Base Wksp
FA	Ouimet	DEME
CA	Penny	1 RCHA
DB	Perrin	2 RCHA
WC	Perry	CASC
PP	Pospisil	CJATC
RH	Purton	DMI & C
CH	Putt	DEME
JR	Raby	13 Coy
HG	Ray	Yuma Proving Grounds
EA	Rochefort	4 Fd Wksp
V	Roddick	13 Coy
AC	Rose	56 Cdn Inf Wksp
HA	Rosson	DEME
WGL	Russell	202 Base Wksp
WJ	Shearing	CASC
WRL	Springford	CJATC
JA	Stott	10 Coy
GW	Swallow	DEME
RH	Thorn	RCEME School
DE	Wilson	CDLS Washington

LIEUTENANTS

JFJ	Allaire	4 Coy
GW	Anscomb	11 Coy
JH	Armstrong	LdSH (RC)
WD	Armstrong	RCEME School
DS	Axford	DEME
KD	Baird	RCEME School
JT	Bart	RCEME School
JLSC	Belisle	RCEME School
RG	Bell	RCEME School
RE	Betzner	RCEME School
DL	Black	RCEME School
JABR	Bouchard	14 Coy
JPA	Boucher	RCEME School
JBR	Bouliane	RCEME School
R	Boyko	3 RCHA
RR	Britt	RCEME School
FN	Brodie	7 Coy
JAP	Charlebois	202 Base Wksp
JDG	Choquette	5 Coy
DL	Clarke	14 Coy
RF	Conway	Wescom
JGD	Crookston	Mat Com/SAVO
GW	Davies	RCEME School
JS	Davies	RCEME School
RE	DeLeeuw	2 Fd Wksp
DG	Dinsmore	RCEME School
JA	Dixon	EBS Bn
HT	Edworthy	RCEME School
DH	Feller	10 Coy
RJ	Ferguson	RCEME School
JNR	Fischer	EBS Bn
JJJ	Fyfe	RCEME School
RR	Fraser	RCEME School
JJC	Girrard	RCEME School
MJJR	Giroux	5 Coy
PAR	Glynn	RCEME School
GWE	Godson	202 Base Wksp
GT	Hammond	CP/DPRC
JI	Hanson	4 Fd Wksp
LM	Harvey	DEME
TW	Healey	Cencom
KW	Henderson	DEME
EF	Joyner	3 Coy
HG	Kayne	202 Base Wksp
JEY	Kingsbury	RCEME School
WW	Laird	56 Cdn Inf Wksp

LIEUTENANTS

FH	Leach	1 Tpt Hel Pl RCASC	JGHL	Roy	202 Base Wksp
JPA	Leger	2 Fd Wksp	J	Sanders	RCEME School
FG	Legg	HQ Sask Area	LFG	Scagnetti	RCEME School
EB	MacLellan	DEME	RH	Seguin	RCEME School
JJP	Marchindon	RCEME School	BH	Simms	4 Fd Wksp
AE	Marble	RCEME School	GE	Smith	AEEE
JHPL	Martel	4 Fd Wksp	JH	Spackman	RCEME School
WR	McCaughen	HQ CBUE	RGL	St Aubin	RCEME School
LF	McLeod	7 Coy	GG	Stewart	1 Fd Wksp
A	Nellestyn	CDLS London	TW	Strang	RCEME School
DP	Nikiforuk	1 Fd Wksp	VB	Suddaby	11 Coy
O	Oishi	1 Fd Wksp	R	Thomas	202 Base Wksp
JLPJ	Pacquette	RCEME School	JT	Thompson	HQ CBUE
TR	Patterson	202 Base Wksp	B	Tomlinson	13 Coy
NE	Pothier	RCEME School	AD	Tupper	27 COD
PG	Pothier	HQ CBUE	JNJA	Turcotte	8 CH
CF	Potter	RCEME School	GR	Walker	RCEME School
HG	Ray	DEME	RL	Walker	3 Coy
GA	Riley	202 Base Wksp	JW	Warmington	RCEME School
WD	Roche	8 Coy	YP	Woo	202 Base Wksp

SECOND LIEUTENANTS

JJPR	Jobin	RCEME School	JRMB	Taschereau	3 Coy
JGMY	Pedneault	7 Coy	JEGA	Touchet	RCEME School

UK EXCHANGE OFFICERS

REME

Maj D	Hill	RCEME School	Maj JB	Ingram-Cotton	DEME

(ACCOUNTING PROCEDURES continued)

Equipment Code Numbers have been allotted for new equipment and obsolete equipment deleted. Projectors and teletype equipment have been allotted new code numbers under Instrument Generic Group.

During trades training programs when group 1 tradesmen are employed on productive jobs, the direct labour hours to be recorded will be Standard Repair Times plus 10 per cent for the specific job, the balance of time expended will be considered as trades training.

Tradesmen normally employed in Administration and Control Overhead trades have been detailed and all available time for these personnel will be recorded under the Overhead trades column of Monthly Time Returns.

Field Workshops are not required to submit Monthly Time Returns.

A table of basic factors for the analysis of RCEME manpower employment is provided.

Deviations in accounting procedures for RCEME Servicing Sections is detailed.

What is it? - T58 Engine Mobile Test Stand Class D.

FREE LIBRARIES

I choose free libraries as the best agencies for improving the masses of the people, because they give nothing for nothing. They only help those who help themselves. They never pauperize.

-Andrew Carnegie

RCEME SCHOOL at CONNAUGHT RANGES

By Lt RJ Ferguson

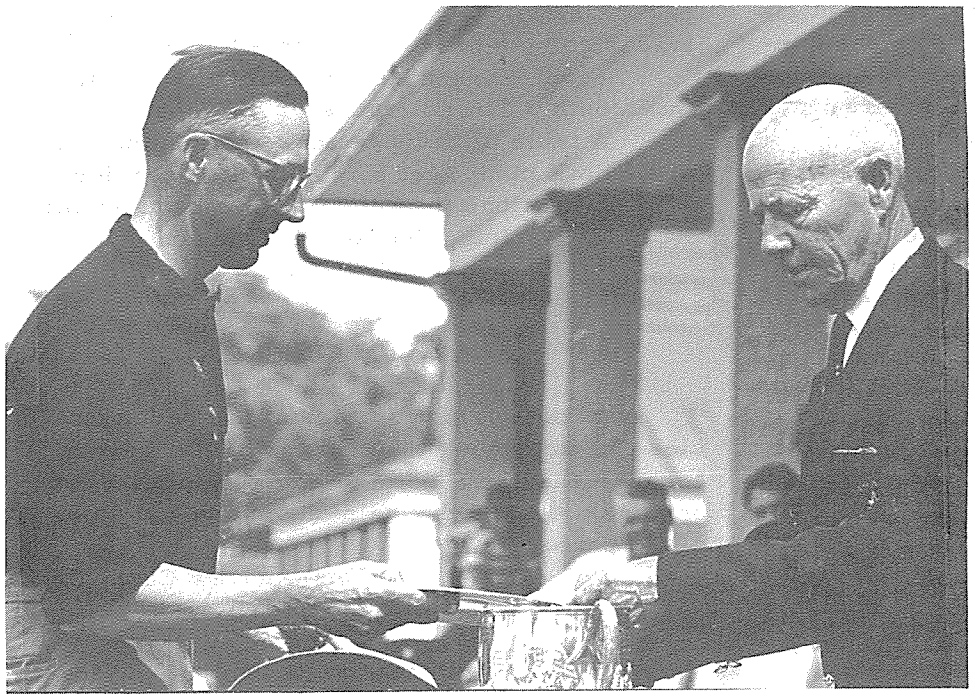
This summer the RCEME School rifle team participated in the Dominion of Canada Rifle Association (DCRA) matches and won its way into the CA(R) Small Arms Competitions at Connaught Ranges near Ottawa.

For the past 97 years members and former members of the Canadian Forces have competed at DCRA meets. Two kinds of competitions are held: In one case, SR(b), the conditions are made as nearly ideal as possible; adjustable aperture sights and slings are allowed, and all firing is done from the prone position. The service condition matches, SR(a), are fired using battle sights, no slings, and various firing positions. Since the 7.62 mm FN(C1A1) was introduced it has been used in the SR(a) competitions, while the No 4 fitted with either a .303 inch or 7.62 mm barrel is the SR(b) weapon.

Sgt KL Moore was the only RCEME School winner of a major DCRA prize. He tied for first place in the MacDougall Challenge Cup Match with a score of 99, made up of 49 at 200 yards and a 'possible' at 500 yards. In the shoot-off later that day he broke the five-way tie by getting five bulls-eyes in a row.

Compared with that of the DCRA the history of the Regular Army Meet is brief. Since the early fifties the CA(R) small arms competition finals have been held at Connaught Ranges in the week immediately following the DCRA shoot. This gives many of the competitors two weeks of continuous shooting under widely varying conditions.

The CA(R) meet includes a series of competitions for various individual and team trophies and prizes. Each Command weapon team consists basically of a unit team plus a few individuals from other units within the Command. The team and individuals must win the right to go to Connaught by winning in the earlier Area and Command meets. Each Command team comprises a rifle team (22 members), a pistol team (10), and a SMG team (10). Sniper and LAR matches are also fired with competitors found from within the Command total. The most important of the awards in the CA(R) meet are The General Vanier Trophy, awarded to the Command small arms team with the highest aggregate score in certain specified



Sgt Moore receives the MacDougall Challenge Trophy from the past president of DCRA, Col JD Fraser. Photographs by Sgt AR Slaughter

"A RCEME Rifleman". Cfn MacInnis, a graduate RCEME apprentice, loads his magazine.

The RCEME School team in the DCRA Dundonald Match prepares magazines. This match requires each man to fire 60 rounds at a series of targets exposed for very short periods. Total hits per team determines the winner. Shown left to right are: Sgt Moore, Cfn/App Netzer, Major Fendick, S sgt Latour, L sgt Bell, Cfn Wills, Cfn MacInnis, S sgt Jermey.

rifle, pistol, SMG and LAR matches; and the Letson Trophy which is awarded to the unit rifle team obtaining the highest aggregate in 13 rifle matches. The Queen's Medal for the CA(R) is awarded for individual rifle shooting during this meet. The winner is not decided until the last shot of the last match is fired, and he is then carried shoulder high by his teammates in a special chair from the firing point to the Pavilion to receive the medal. The 1967 Canadian Army Bisley Team will consist of riflemen from the winning unit (Letson Trophy) team and certain other individuals who placed highest in the week's shooting.

The RCEME School riflemen won the Eastern Ontario Area and Central Command matches with scores of 4067 and 4012; but at Connaught the competition was too stiff and the unit's score of 4027 for the Letson Trophy was only good enough for fourth place. The winner was the LdSH (RC) team from Western Command.

During the CA(R) meet Craftsmen MacInnis and Wills, 1965 graduates of Apprentice Training Company, won the second Fire and Movement LAR team match. This was a significant achievement since their opponents, in many cases, were experienced competitors. This was the first season for MacInnis and Wills, and this was the first match they had ever fired with the LAR.

The RCEME School team was fortunate

Lsgt Bell and Ssgt Latour study wind and weather before commencement of a match.

Major Fendick and S sgt Jermey await the first exposure in a Snap Shooting Competition.

in having two experienced competitors who were able to give valuable coaching to the others. Major RF Fendick, for instance, won the Queen's Medal in 1948, when there was only one medal for all components of the Canadian Forces and the RCMP. He was Canadian Service Rifle Champion in 1958; he has been to Bisley twice as a member of the Canadian Rifle Team and once as Adjutant and coach for the Canadian Army Cadet Team. S sgt FW Jermey has fired in DCRA competitions almost every year since 1947. He has qualified for Bisley seven times, going on four of the trips. This year at Bisley he was second highest Canadian in the Grand Aggregate (12th over-all) and placed in the top 25 in the final stage of the St. George's Shield Match. During the DCRA Meet Major Fendick and S sgt Jermey were chosen to be two of the eight Regular Army riflemen who won the Inter-Service Team Match against teams representing the CA(M), RCN, RCAF and RCMP.

The School has been very active and helpful in its shooting within the resources available. The Regimental fund advanced the entry fees for all the SR(a) and SR(b) team matches and SR(a) individual events. The team repaid over half the money from winnings and should do better in future years. The School's attitude is praiseworthy and remarkable since weapon handling is not our primary interest and because several weeks of work are lost while the team practices and competes.

Members of the 1965 RCEME School Team were:

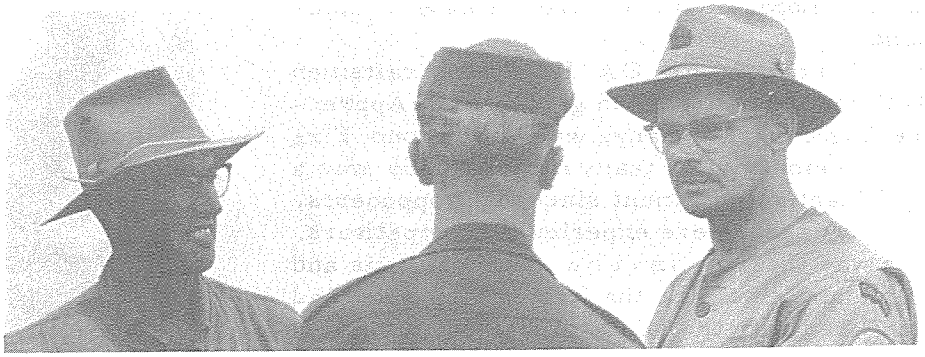
Maj	RF	Fendick	L sgt	GA	Bell
S sgt	FW	Jermey	Cpl	TE	Bailey
S sgt	RM	Latour	Cpl	RT	Culos
Sgt	RL	Moore	Cfn	RT	MacInnis
Sgt	AR	Slaughter	Cfn/App	J	Netzer
Sgt	A	Toth	Cfn	WD	Wills

L sgt LWD Trenholme was with the team through the Area and Command shoots, but was posted to RCR Depot before the CA(R) finals.

Sgt Lusk and Cfn JC Prentice were also members during the earlier eliminations but were unable to proceed with the team.

Left below: S sgt Jermey.

Below: "Getting the word". Major Fendick briefs Cfn Wills (center) on one of the finer points while Sgt Moore listens with interest.



TECHNICAL NOTES -- ELECTRONIC

TELS TOOL BOX

Last fall radio and radar technicians of corporal rank and above were asked to complete a questionnaire on the 5180-21-105-3839 Tool Kit, Telecommunications, C1 (the "tels tool box"). Many of you have since asked why this survey was carried out and what the results were.

Every two or three years DEME reviews the range of tools in the tels tool box. The purpose of this review is to find out if any tools should be added to or taken out of the tool box. Changes in tool boxes are usually necessary as main equipment and maintenance techniques change.

Last year we decided to carry out the review by asking the men who actually use the tools in the field for their advice. Analysis of the completed questionnaires at DEME showed that no major changes were required to the tool box. The only changes required were deletions of some minor tools. Because of the administrative costs involved in making these changes it was decided to let the tels tool box EIS stand and make the minor deletions when major changes were necessary.

NEW TUBE AND TRANSISTOR MANUAL

A few months ago copies of the new RCEME standard manual, Tube and Transistor Handbook, published by De Muidekring N. V. Bussum, Netherlands, were issued to all RCEME workshops and the RCEME School.

The need for new tube and transistor handbook, to replace the unsatisfactory types of manuals then on issue, was recognized at DEME two years ago. After certain ground rules were set up, a search was carried out to find suitable reference books. The requirements were:

a. Tube and transistor data must be contained in one volume and must cover all tubes and transistors used in Army equipment.

b. Only the data required by a technician should be shown; the existing references contained a lot of superfluous, confusing data.

c. Up-to-date data (for new tubes and transistors) must be made available, when published.

During the search for a suitable handbook, the reference books used by the technicians of the RCN, RCAF, DRB, NRC, US services and civilian industry, were examined.

We found that our requirements could only be met exactly if we contracted to have a reference book written specially for the Canadian Army. The cost of producing a special book was too high. The De Muidekring book was the best compromise available and new issues (the present one was published in 1963) will be automatically distributed when published.

NEW STANDARD MULTIMETER

The new tri-service standard multimeter, 6625-21-116-7551 Multimeter AN/URM-505, is now being issued to RCEME units for use by radio, electrical and radar technicians.

An overall Army shortage of multimeters arose last year because new entitlements had been approved and also because some ME77 multimeters had been condemned. Most RCEME technicians found the ME77 satisfactory but that instrument was not in production and none could be bought. Of the instruments available for procurement, the URM 505 most closely meets the needs of the three services.

To provide commonality within RCEME, the new instruments are being issued to RCEME units while the ME77s withdrawn from our technicians will be issued elsewhere.

Some characteristics of the new multimeter are:

a. The URM 505 was procured to equal or better electrical specifications than the ME77.

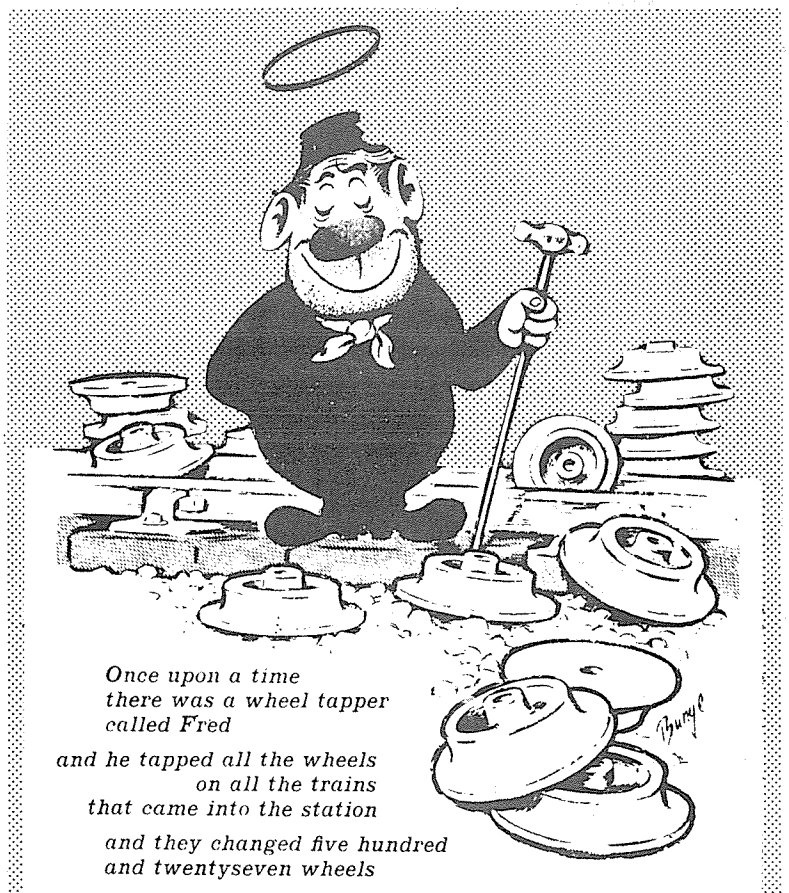
b. The URM 505 is not ruggedized (as the ME77 is) but a leather carrying case has been provided. The URM 505 is too large to fit in the tels tool box.

c. The URM 505 is almost identical to a standard commercial instrument: the Bach Simpson 635HV.

The underlying principle that illuminates the principles of war should be bold imagination. No idea should be too fantastic or too unorthodox to be rejected without a fair hearing.

-Military Review (US)

...sure isn't crowded considering it's 'sports' afternoon'...



Once upon a time
there was a wheel tapper
called Fred

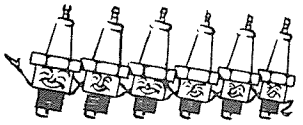
and he tapped all the wheels
on all the trains
that came into the station

and they changed five hundred
and twentyseven wheels

and then they found out—
his hammer was cracked!

TEST EQUIPMENT MUST BE CHECKED

From a poster issued by the Directorate of Flight Safety (RAF)



SIX LITTLE PLUGS

Six good spark plugs
Very much alive,
Someone used a pipe wrench
And then there were five.

Five good spark plugs
Ready to go to war,
One rolled off the fender
And then there were four.

Four good spark plugs
Adjusted to a tee,
One was overtightened
And then there were three.

Three good spark plugs
All had work to do,
One split from detonation
And then there were two.

Two good spark plugs
Helping fight the Hun,
One was adjusted wrong
And then there was one,

One good spark plug
Soon went on the bum
It wasn't tightened up
And then there were none.